DOCUMENT RESUME

ED 395 833 SO 022 872

TITLE Qualities Required of Education Today To Meet Foreseeable Demands in the Twenty-first Century. International Symposium and Round Table Proceedings (Beijing, China, November 27-December 2, 1989).

INSTITUTION United Nations Educational, Scientific, and Cultural Organization, Paris (France).

PUB DATE 89

NOTE 166p.; For the final report, see ED 339 621.

PUB TYPE Collected Works - Conference Proceedings (021)

EDRS PRICE MF01/PC07 Plus Postage.

DESCRIPTORS *Educational Change; Educational Development; Educational Environment; Educational Improvement; *Educational Innovation; Educational Needs; Educational Planning; *Educational Policy; *Educational Quality; *Educational Trends; *Futures (of Society)

ABSTRACT

This report contains proceedings of a United Nations Education, Scientific, and Cultural Organization (UNESCO) international symposium and round table. The main objective of the meeting was to debate long-term goals of education and its role in preparing young people to face the demands of the 21st century. Papers presented include: (1) "Young People--The Leaders of Tomorrow? The Role of the Social Network as a Means of Creating Favorable Conditions for Enhancing the Quality of Education in the Future" (Gunnel Backenroth); (2) "Deepening Reform and Wider Openings to the Outside World--The Cornerstone of China's Development of Education in the Twenty-first Century" (Yuan Baohua); (3) "Teaching Human Rights" (Etienne Copel); (4) "Beliefs and Action in Educational Change" (Rosalind Driver); (5) Untitled paper (Peter Ellyard); (6) "Understanding the Predicament of Humankind" (John E. Fobes); (7) Untitled paper (Sergei A. Povalyaev); (8) "What Are the Challenges Which Face Humanity in the Next Twenty to Thirty Years?" (Ian Winchester); (9) "The Future of Education in Asia and the Pacific" (Leonardo de la Cruz); (10) Untitled paper (Ingemar Fagerlind); (11) "Some Recommendations and Directions" (D. Hernandez); (12) "Moral Education faced with the Challenge of the Scientific and Technological Revolution of the 21st Century" (Lu Jie); (13) "Ideas of China's Educational System in the 21st Century" (Hao Keming); (14) Untitled paper (Dr. Klein; Dr. A. Grik); (15) "A World Encountering Limits to Quantitative Change: Thoughts on Making 'Quality' Respectable" (G. Kutsch); (16) "Enhancing the Quality of Teachers is the Priority in Meeting the Twenty-first Century Education" (Gu Mingyuan); (17) Untitled paper (I. Muravieva); (18) "On Enhancing the Quality of Education Through Effective Learner-Teacher Interaction" (Toshio Ohsako); (19) Untitled paper (Shin Se-ho); (20) Untitled paper (Ramiro Tobon); (21) "An Investigation of a Mode of Fundamental Education in the 21st Century-Basics and Principle of Planning Future Curriculum, Subject Matter and Methods of Teaching" (Sang Xinmin); and (22) "Improving Learning/Teaching in the Third World" (R. F. Amonoo). A discussion guide, final report, and list of participants are appended. (EH)

ED 395 833

INTERNATIONAL SYMPOSIUM AND ROUND TABLE

QUALITIES REQUIRED OF EDUCATION TODAY TO MEET FORESEEABLE DEMANDS IN THE TWENTY-FIRST CENTURY

Beijing, People's Republic of China
27 November — 2 December 1989

PROCEEDINGS

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I. PREFACE

This volume contains the proceedings and reports of the Unesco International Symposium and Round Table "Qualities Required of Education Today to meet Foreseeable Demands in the Twenty-First Century", held from 27 November to 2 December 1989 in Beijing, People's Republic of China.

The main objective of the meeting was to debate long-term goals of education and its qualitative requirements, with a view to assisting young people to meet effectively their future challenges, and to participate actively in personal, social and occupational life towards the twenty-first century.

The participants of the meeting, invited by Unesco in a personal capacity, had multidisciplinary backgrounds such as education, science, economics, sociology, demography, philosophy, psychology etc. It was a particularly interesting attempt for specialists from non-educational fields to jointly debate the future of education from multidisciplinary angles.

This volume presents mainly the intellectual substance of the meeting and the documents prepared for the administration and organization of the meeting have been deliberately omitted. Since all the participants were invited by Unesco in a personal capacity and they conceived their papers according to their expertise and wishes, it may be stressed that the views and opinions expressed in the papers are those of authors and do not reflect those of Unesco nor the host country.

The diversified views, positions and experiences of specialists from many regions and countries on the future conception of education in this volume will hopefully stimulate increasing and intensified debates and reflections of individuals and organizations around the world on the future of education towards the twenty-first century.

We would like to express our sincere gratitude and appreciation to the participants and authors of the meeting and to all specialists and individuals who contributed to the preparation and realization of the meeting.

T. Ohsako
Unesco

II. Papers Presented at the Round Table

Ms. H. Sena Akuffo
Representative of the International Students Movement
for the United Nations

Allow me to express on my own behalf and on behalf of ISMUN our profound appreciation to Unesco who has clearly indicated its commitment to its mandate, revealed by the great efforts it has made to meet the formidable challenge of the 21st century through endeavouring to collate information on the demands of education with a view to raising the awareness of people and governments and ultimately produce a blue print or guidelines to advise educational planners and policy makers.

We also wish to record our gratitude to the governn ent of the People's Republic of China for making it possible for me to represent my organiz ion in Beijing.

The theme for this international symposium and round table - "Qualities Required of Education Today to Meet Foreseeable Demands in the Twenty-First Century" is indeed both apt and opportune at a time when the world is on the threshold of the 21st Century, witnessing stunning changes in all fields of human endeavour. We could argue that the world is in the vortex of a second industrial revolution. This development will predictably bring about change which will touch all aspects of life. As education is defined by society, if a society is experiencing change then there is an urgent need for education to follow suit, to ensure that relevance is safeguarded and its goals remain in focus, particularly as regards the realization of national aspirations.

This paper will attempt to identify some challenges to and requirements of education in the coming decades, taking into account foreseeable socio-economic, socio-cultural, scientific and technological developments. Before tackling the main concern, I deem it pertinent to reflect on the objectives of education, since education is the underlying premise of the theme.

Undoubtedly, education is a powerful tool for self-realization, national advancement and development. The zeal and capital committed to it by governments stress this point. The major objectives of education could be principally listed as:

- training for good citizenship (patriotism, duties and rights of the citizen);
- self-realization;
- national advancement and development.

A nation without true citizens is like the casing of an empty shell. Training for good citizenship also ensures general vigilance, readiness to guard against perversion or subversion of rights, thus preserving the dignity and value of human beings.

Self-realization is one of the desirable and anticipated objectives of education. Education acts as a sluice gate of a dam, enabling individuals to fully realize their potential. The training of general manpower is the prop upon which national advancement and development can be successfully initiated. In this objective the development of the individual and of the state are inherent, inextricably linked and complementary.

These objectives of education remain relevant only if they respond to realities. As already stated, the world is experiencing profound changes of crucial significance to education. Technological innovations are steadily modifying attitudes, values and ethics and imposing strain and stress upon the family, breaking up population patterns and leading to degeneration of the environment. These and other anticipated problems can only be handled effectively by a time-tested instrument - education.

Fostering positive human attitudes through the cultural milieu might be rigourously encouraged. Cultural homogeneity is an elusive and unattainable goal, because cultural diversity is part and parcel of mankind's legacy. In spite of cultural diversities, there are some elements of unity - elements that seek to emphasize human solidarity and good will. All cultures, no matter how disparate, are united by some universally accepted values. A balanced cultural education should seek to identify, delineate and project these positive values, reaffirming those which express human solidarity and internationalism. This is important as the world has embraced the concept of regionalism which involves the aggregation of sovereign states to initiate economic enthusiasm. Undoubtedly its success hinges on cooperation, achieved through respect, goodwill and support among states. Cultural education with emphasis on internationalism should be actively encouraged.

Apart from stressing the international dimensions of cultural education, an anticipated innovation in the educational system would have to consider integrating population education into general school curricula. Population-related issues constitute an area of grave concern to peoples and to governments worldwide. Existing population patterns are being disrupted leaving disquieting problems in the wake. The perfect population structure is becoming increasingly unattainable. In the core countries, the otherwise perfect pyramid is inverted whilst in the peripheral countries the base of the pyramid is over extended. In the latter, apart from the strain on limited resources, the extended family system is threatened with disintegration, as its members are unable to help those in need, especially the elderly. It is becoming alluring and modern to adopt the nuclear family concept. It must be stressed that social security in the peripheral countries lags behind near legendary inflation rates and that, unlike the situation in the cone countries, a pension does not guarantee security. Security is the family. The family can only withstand the onslaught if a perfect population structure is maintained with a distended pyramidal base, if the active population commits more money to help the increasingly large ratio of young people and assure the financial security of the elderly. This scenario is conversely mirrored in the cone countries. The population pattern is top-heavy, a small active population carries a larger, non-active population. Ensuring the capacity of such a work force to generate resources to support the non-active population is a really daunting task.

A thumbnail analysis would seem to advocate the need for population education in school curricula. Such an innovation would invigorate the curriculum and be a positive response to the challenges of education envisaged in the 21st century. Such a curriculum should aim at enabling young people in schools to understand and appreciate the factors influencing high population growth. The possible factors for attention are:

(i) Population dynamics - instructing young people in patterns of population growth with serious attention to birth and death rates which can be identified as a natural phenomenon;

(ii) Human reproduction - study to involve identifying factors that accelerate or slow down reproduction in various ways;

(iii) Health problems related to child bearing - risk associated with a high birth rate, young girls below 15 years of age and women above 35 becoming pregnant.

(iv) Family size and detailed explanations of social and economic consequences of large families. Enabling children to understand that, all other things being equal, the quality of life in each family depends on its income. Therefore, for a given income level, the larger the family, the poorer the general quality of life.

Environmental education is another area to be considered in view of sustained assaults on the environment and the potential threat thus posed to mankind. The environment is being attacked from land, sea and air. The hue and cry raised by environmental issues is indicative of the genuine feeling of collective fear and concern. The environment is central to the survival of mankind.* This fact is underlined by the biblical history of creation, where

God created the environment and put Man in it to ensure his comfort and to guarantee his survival. Mankind in its bid to make life more comfortable has become environmentally thoughtless. Technological innovation has little respect for environmental protection, the motivating factor being essentially profitability and performance.

To prevent the steady deterioration and decay of the environment, a meaningful and a well thought out environmental education programme is needed, which aims at making students/pupils environment conscious and appreciative of the frightening problems posed by environmental mismanagement, thus encouraging students to strive to introduce remedial measures.

Another anticipated challenge to education in the 21st century is the information explosion which is the by-product of the second industrial revolution. The information explosion in itself is beneficial as it accelerates learning and developing relevant skills. However, developments in information and communication technologies as facilitators should be seen as a double-edged sword. This phenomenon contributes significantly to the learning process, but at the same time can create serious problems for society. Care must be taken to regulate information access and consumption by young people. Given the curiosity and audacity of young people, they may seek information which their age and experience might not have equipped them to deal with and such information could be harmful.

As we stand on the threshold of the 21st century, there is no doubt that education can only be relevant if it is in harmony with the massive changes taking place around us and fully reflects today's new realities.

Professor Gunnel Backenroth
Department of Psychology
University of Stockholm
Sweden

"Young People - The Leaders of Tomorrow??? The role of the social network as a means of creating favourable conditions for enhancing the quality of education in the future".

SUMMARY:

The quality of education should match the development of the particular society in question; scientifically, ideologically, culturally, socially. The content of education must be relevant for students in their own society as well as adequately presented in accordance with their cognitive development. However, financial resources, methods, educational content, etc., cannot influence quality unless interaction takes place in the classroom. Social interaction between educator-student is thus stressed in this paper.

A model is proposed regarding the importance of the social network for the quality of education. All persons in the social network - family, educator, peers, community members - have expectations of each other and responsibilities to each other in enhancing the quality of education. Constructive communication and methods for collaboration are important.

On the threshold of the twenty-first century, I believe we are approaching a new style of life. We will probably establish new ways of relating to each other and to the world which will also affect education. International, as well as interdisciplinary cooperation, will be of increased importance, as will across-age cooperation and cooperation between professionals and non-professionals.

We will have to take on increased responsibility for our lives and do something constructive (health, environment ...). We will probably rely more on ourselves and less on expertise and politicians. We may focus more on human growth processes. We have to reach further ahead when it comes to human issues! We must learn to be in touch with our inner life: our intuition, our creativity, our feelings and our spontaneity.

Happiness will not be an important issue in the twenty-first century, but rather personal growth and maturity:

> *"... the adult with a capacity for true maturity is one who has grown out of childhood without losing childhood's best traits. He has retained the basic emotional strengths of infancy, the stubborn autonomy of toddlerhood, the capacity for wonder and pleasure and playfulness of the preschool years, the capacity for affiliation and the intellectual curiosity of the school years, and the idealism and passion of adolescence. He has incorporated these into a new pattern of simplicity dominated by adult stability, wisdom, knowledge, sensitivity to other people, responsibility, strength and purposiveness".*(1)

(1) in Stone, L. J. and Church, J. (1973): Childhood and Adolescence. A psychology of the Growing Person, 3rd Ed., New York, Random House, p. 499.

1. Quality of education - a proposed model of the importance of the social network

Education is inherently socio-cultural in nature and thus does not develop in a vacuum. Consequently, educational quality must be developed in its own cultural context. The concept of quality may differ in different cultures.

Education is both a window on and a mirror of society, formulated around cultural-specific values. There are several factors likely to influence education regardless of cultural context, namely population, economy, politics, environment, international affairs, social network structure, research, technology.

Qualities required of education today to meet the twenty-first century's demands necessitates our taking into consideration, for example, the social context in which education takes place. The importance of the social network has received increasing attention from researchers in the last decades.

As a clinician focusing on the family/the individual client/staff members and as a researcher (in clinical psychology, rehabilitation, communication, handicaps, mainly deafness/hearing impairment) and educator, I should like to emphasis the interaction and the communication of attitudes, values, perspectives, etc. between:

a) learner - parents
b) learner - teachers
c) learner - peers
d) learner - community

It is essential that all links (Fig.1) in the social network function; the primary or emotional social network (family), the secondary social network (peers), and the professional social network (teachers and various other community members).

The national cohort of young people in Sweden will be smaller in the twenty-first century compared to recent decades. Of the approximately 8.4 million in Sweden (statistical figures from January 1987), about 2.7 million are under 25 (32% of the country's population). By the year 2000 the number of people under 25 is expected to decline to about 2.5 million. The "baby boom" of 1964-66 has placed heavy strains on the Swedish school system.

Statistics (2) show that about 17% of the Swedish population are over 65 years old, a percentage which will continue to grow. The number of people aged 90-94 will show a heavy increase by the year 2000.

Increased longevity and stagnation in population growth are among the reasons for the proportion of elderly people in Sweden continuing to increase. The average life span is 73.8 years for men and 79.7 years for women.

Education is for life. Young people are our future, our hope and our leaders of tomorrow. But how does society prepare young people for such tasks? Children starting school today will be the next generation developing and governing the future society politically, economically, technologically, scientifically, educationally, socially and culturally. What are our attitudes to young people? Do we see them as "assets" or as "trouble-makers"? Do we think they can vitalize our society or do we fear they will destroy it? How does society - at different levels - support young people's identity (personally, socially, culturally and professionally), initiative, self-actualization, responsibility, visions, etc.? We need to clarify for ourselves our own attitudes and become more aware of how they influence our educational practice, our research objectives and our contacts with young people. Young

(2) Statistical figures in this paper have been provided by the Swedish Institute in Stockholm.

FIG. 1

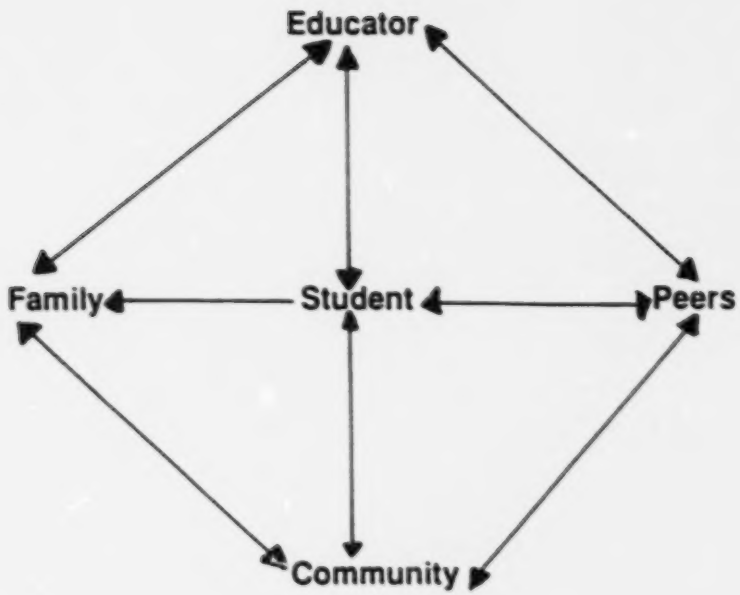

Fig. 1. A proposed model for demonstrating the importance of the social network for the quality of education (Backenroth, 1989).

people of today need increased contact and confidence with adults. They need guidance and support for their future responsibilities.

2. The role of the family in enhancing the quality of education

The smallest unit of society is the family. The nuclear family is the most important social unit in Sweden, although most families nowadays are quite small, the average number of children per family being 1.8 children. Only 13% of the female population remains childless, however this proportion is increasing. The great majority of children under 18 years old live with both parents (81%).

Family is a broad concept encompassing, for example, the "normal" family, the emotionally disturbed family, the socially disadvantaged family, the cultural minority family, the psycho-socially isolated family, the alcoholic family, the one-parent family, the disabled family and so on.

Parents are a child's first most influential environmental factors, as regards personality, social and intellectual development and cultural identity.

The child's first hour of life is of utmost importance for communication and interaction in the family. Psychological research has shown that this first hour of life constitutes the child's very first sense of identity. Mothers who have just delivered their child are emotionally open, even the most withdrawn women. Emotional openness provides an enormous possibility for mother and child. This "imprinting process" probably serves to provide increased survival possibilities.

For this primitive sense of identity a warm and secure symbiosis between mother and child is most favourable. In every phase of a child's development there is inherent a psycho-social crisis. According to Erikson (3) every phase of development, if successfully attained, offers an ethical value (hope, motivation, purpose, competence, loyalty, love, care and wisdom).

Infancy is, Erikson maintains, the period when the child learns whether the world is a good and satisfying place to live or a source of misery and frustration. This phase provides the foundations for attitudes of optimism/pessimism to the world in general. Parents' attitudes of unconditional love, trust, respect are essential for the child's developmental possibilities. An attitude of basic trust permits the development of a variety of emotional responses facilitating an openness to experience and an ability to master reality. Infancy lays the foundation for subsequent developmental phases. Thus this phase constitutes a very important period in the child's life. Examples of pathology emanating from this phase are psychoses, psychopathy, emotional detachment, mistrust, incapacity for constant relationships.

According to Erikson it is of vital importance that the mother convey a hope to the child which is based on the cultural values in the environmental context in which the child is raised. The mother must be fundamentally anchored to her own cultural standards and with existing hope in that particular culture. The hope must be relevant in the world outside the home.

The role of the family in education (social education) is much smaller today. This may be due to an attitude change in society as to what constitutes the family's responsibilities on the one hand, and what constitutes society's role on the other.

Furthermore, parents' working life, the loosening of family ties, the diminished religious influence in society have changed the family's role as a basis for education. As a consequence and unfortunately, many parents abandon or "abdicate from parenthood", from too close a commitment to the continuous difficulties parenthood poses. Thus, parents need

(3) Erikson (1968): "Identity, Youth and Crisis".

ongoing support in the process of the child's development in order to take on their role. Harmonious, emotionally secure and competent parents are one of a child's most valuable resources. However this does not lessen the responsibility of the school.

Parents seldom feel important or resourceful in relation to school and education. However, parents always remain the "expert" of their own child to some degree. As professionals we must learn to listen more carefully to what parents have to say as well as to be more sensitive to their needs. If parents' needs are not adequately dealt with, resources aiming at the child have limited value, according to international documentation.(4)

Giving parents meaningful roles in school governance, opportunities to support the child through communication with the school about progress and difficulties, participation in extra-curricular activities (field-trips, study visits, etc.) gives a basis for close collaboration between education and family. The student and his/her family must play a more active part in education in the future. International documentation demonstrates a positive connection between the quality of education and the active role of the student/student's family.(5)

In summary, what do parents need in order to enhance the quality of education?

Parents need "parent group" education
Parents need group counselling
Parents need marriage guidance
Parents need more time and attention for each other's needs as individuals and as a couple
Parents need more time to spend with their children
Men must be encouraged to play a more active part in caring for the home and children
Parents need to see and strengthen the child's "assets" not focusing on limitations
Parents need to play a more active part in education
Parents and education need to find means to collaborate more constructively and effectively.

3. The role of the teacher in enhancing the quality of education

Women and men have equal access to all types of education and also have the same opportunities to take examinations within the Swedish public education system.

Students enter education on the basis of their personal and unique life experience (from family life, peers, cultural context, etc.). On the basis of this uniqueness in the student's present life situation/history, he/she will participate and utilize education (content, presentation, social interaction) in his/her unique way. The very same kind of educational programme elicits varying learning experiences and outcomes of the programme.

Sweden has nine years' compulsory comprehensive schooling with a single nationwide curriculum. The curriculum stipulates that the school system promotes equality between the sexes. School aims to give boys and girls an identical education. Home economics and

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(4) Mindel, E.D. and Vernon, McCay (1971): They grow in silence. The deaf and his family. Silver Spring, Maryland: National Association of the Deaf.

(5) Evans, H. M. (1984): Increasing patient involvement with therapy goals. Journal of Clinical Psychology, 40, 728-733.
Vernon, McCay (1975): Major current trends in rehabilitation and education of the deaf and the hard of hearing, Rehabilitation Literature, 36, 102-107

technology like typing, textile handicrafts, woodwork and metalwork are compulsory for all children.

Despite the fundamental goals and regulations relating to equality between women and men, and despite the work done in schools to promote equality, the attitudes of the majority of students are still marked by traditional thinking.

Children's attitudes are already established by the time they start school and many research findings suggest that girls and boys are given different treatment from the very first class. Studies show that many teachers, both male and female, find boys more interesting; they regard them more as individuals and devote more time and attention to them. Girls are assigned a more passive role.

Over 90% of both boys and girls go on to secondary education after comprehensive school. The proportion of girls in the 2-year technical vocational line has increased in the last 15 years, though only marginally. On the other hand, the proportion of girls in the 3-year natural sciences stream and particularly the 4-year technology stream has shown a more pronounced increase. The proportion of boys in nursing and other sectors with a large majority of girls has also increased over the same period.

In 1985/86 60% of all first year students at Swedish universities and colleges were women. Studies reflect the division apparent on the labour market: technical studies (22% women), law studies (51% women), medical studies (43% women), nursing (86% women).

There are far fewer women at postgraduate level (31%). Female postgraduates tend to complete their Ph.D studies less often than men. In 1985/86, women constituted 23% of Ph.D graduates. Only about 5% of university and college professors are women.

In the last three decades, expansion of municipal adult education and labour market training have developed and today a large percentage of those enrolled are women. Adult education enables many full-time housewives to return to work. Most women, however, train for "female" occupations and no great change is evident in the traditional patterns of the labour market.

The development towards equal opportunities in Sweden has been made possible by a substantial demand for labour, mainly due to the expansion in the 1960s and 70s (reforms in the field of economic, social and family policy). Swedish equal opportunities policy is fundamentally concerned with the ability of each individual to achieve economic independence through employment and to participate in all aspects of community life.

Sweden has a population of 8.4 million with an active working population of just over 4 million. Women make up more than half of the population and almost one half of the labour force. Slightly more than 82% of all women and 90% of all men are gainfully employed. Women are, however, employed in a more restricted sector of the labour market than men and in occupations which are less well paid. Pay differentials between men and women are, however, small in Sweden compared to many other countries.

In work of reform, women's organizations - both political and independent - have played a vital role. There is general consensus on the principles of equality in Sweden which are also incorporated in the Swedish constitution (a guiding principle for government policy). There are, however, certain areas where special efforts are being made: to improve conditions for women on the labour market/working environment, to encourage men to play a more active part in caring for their children and home, to strengthen the representation of women in decision-making and advisory bodies, to pay special attention to immigrant women in Sweden and to pay special attention to women's credibility in court proceedings (rape, incest, battered women).

There is equality between immigrants and Swedes; however, special rules exist for determining which applicants with foreign educational backgrounds fulfill the general admission requirements to higher education in Sweden.

The disabled have equal rights to education and, in principle, the right to take part in the same activities. At universities and colleges of higher education the disabled take part in ordinary tuition. Anyone in need of special aids can obtain or borrow these via the centre for educational aids in the place of study. Special support during tuition and personal assistance are provided. A strong movement for the disabled exists in Sweden.

The student spends many years in school. School environment is experienced as tough and stressful for many students. Our identity, our self-esteem, our feelings of competence, our well-being are to a great extent based on educational experiences. We leave the educational system with either a feeling of optimism or a feeling of pessimism for the future. Many young people today, unfortunately, leave school with feelings of despair, futility, lack of goals and future vision.

What role does teacher-student interaction play in qualitative education? Teachers being trained today will educate the unborn generation. The teacher probably constitutes one of the student's most essential influences as regards attitudes and relations to oneself/peers/same-opposite sex/adults/disabled/cultural minorities/society as a whole. Teachers need increased awareness of their importance and their impact for qualitative education. They need to be aware of the fact that they may be the most important "instrument" in education and the resultant great responsibility.

Educators need to develop greater self-awareness of both strengths and weaknesses, and how they may influence students and the learning process. They may require supervision, counselling and even therapy. Time and effort in this development must be valued. It takes time to work through all feelings, reach an insight and to act on the consequences in the classroom. In the process new difficulties and decisions arise. Self-awareness is not final but rather a continuous process throughout the educational process. We need a teachers' movement for more qualified professional training and continuous supervision. A teacher who continuously develops him/herself will also more generously "permit" the student to grow and develop.

What theories of man underlies education today? What does education have to offer and what do teachers have to give to students? The future educator must work much more with establishing and developing relationships and a social network in the classroom, not being solely oriented towards intellectual teaching. Teachers must transmit knowledge as well as understand students, their attitudes to education/leisure time activities/work/sexual relationships.

The teacher should be open to a dialogue with young people communicating with them about human relation issues, ethics, values, attitudes and attitude change, ideologies, ethnic minorities, disabilities, ideals and visions. Many young people today have too limited contact with adults giving them feelings of rejection, isolation, increased insecurity.

The teacher may have a more crucial role in the future for children of one-parent families, psycho-socially isolated families, emotionally disturbed families, etc. The teacher may be the most essential adult with whom the student has contact, thus giving the teacher increased responsibility.

The relationship to the students must be based on efforts to create a positive and acceptable working atmosphere where students can work and develop a confident relationship where the teacher has empathy in the student's life situation (psycho-socially and culturally), motivation, developmental readiness. The teacher may act as a facilitator in the educational process in listening, accepting, understanding, supporting, reflecting - without being a

student counsellor or a therapist. Teachers' attitudes to students can either facilitate or inhibit qualitative education.

No class distinction should be made in education. Teachers should not focus their attention only on the highly intellectual and socially integrated children. Students of lower/average intellectual capacity must also receive attention and good learning opportunities. Teachers' unconscious attention to students can create a process operating like a "vicious circle" or a "self-fulfilling prophecy", namely resulting in higher motivation and grades for those students of higher social class. This process does not "tune well" with our concept of equity.

Emotionally secure, competent and committed teachers are one of the most important assets for qualitative education in the future. "A teacher who acts out of love does not risk burn-out effects!" Teachers who are committed to their tasks of education, interested in human relationships and growth, how to promote communication in the classroom and how to understand and deal with psychological defense mechanisms, teachers who convey enthusiasm, opportunities for creativity, problem solving and curiosity to search for more knowledge are able to make the teaching process into an enjoyable - not boring - activity where social interaction is also encouraged and strengthened.

Educators must become more growth oriented and optimistic about their own role in the classroom and about young people's possibilities in a future society focusing on the student's possibilities, not limitations. Eeducational content needs to prepare young people for their future roles (sexual relationships, parenthood, professional roles, responsible members of society).

Today many early disturbed children enter education, children who are today detected earlier by, for example, day-care centres and/or pre-school teachers. Teachers need an increased understanding for developmental issues, emotional disturbance and referral units in the community, children's cognitive readiness, psycho-social maturity. Educational content and methods can be received only in accordance with the child's understanding and assimilation of knowledge. Education must be adapted to children's developmental ability and psycho-social maturity. Individual differences exist.

Evaluation and follow-up studies in education are necessary and valuable for the educational system, the teacher, the student, the family. In Sweden there is a link between undergraduate study and research. All education about secondary level is expected to be based on research.

Teaching methods should be improved in accordance with the developmental trends in society: science, technology, culture, social interaction. Students - and when feasible, parents - should be more involved in education.

Education should aim at supporting the student to become a confident, self-reliant, personally and emotionally secure, positive, "socially competent", committed, independent but cooperative, imaginative, reality oriented individual having visions and goals to become a productive member of the future society. This implies, besides intellectual knowledge, social education in ethics, values and cultures.

In just a few decades Sweden has changed from a monolingual, ethnically homogeneous society into a monolingual society with a number of ethnic minorities. Due to increased immigration in Sweden, education, besides offering a basic competence, must aim at contributing to an increased international understanding, to peace and the promotion of basic human values. The teacher's role in society today, and increasingly so in the future, is to have a broad "cultural competence" as to different cultural value systems and to their implications for the individual and society in order to promote understanding and facilitate the learning process.

Society has, last but not least, a responsibility to strengthen and develop the teachers' professional identity through regular information, symposiums, cultural exchanges, participation in research programmes carried out in the schools, as well as participation in planning and decision making.

In summary, what do educators need to enhance the quality of education?

Education should promote equality between sexes and encourage students to make "untraditional" occupational choices.

Educators need to be more aware of their own unconscious attitudes and how these may operate in the educational process.

Educators need to work through their own attitudes to students/colleagues/education with the setting of continuous supervision/ counselling/therapy.

Attempts should be made for more appropriate teacher selection for education.

Teacher training programmes and education should promote increased cultural understanding.

Education needs to emphasize education in the mother tongue for ethnic minorities (immigrants, deaf children).

Teacher training programmes and education need to focus more on various disabilities and their implications for the individual and for the family.

Education needs to focus more on human relations and communication.

Educators need to become more growth-oriented and optimistic about their own role and about young people's possibilities in society.

Educators need to actualize themselves in order to influence education more optimistically.

Education should encompass social education necessary in life and in an ever-changing society.

Attention must be paid to teacher training programmes in accordance with a changing society.

Educators need a more comprehensive understanding of developmental issues of the child in order to facilitate the child's potential in future education.

Educators need increased knowledge of emotionally disturbed children and psycho-social problems.

Educators need increased contact with the community (closer contact with professionals in child psychiatry for referrals).

Educators need increased knowledge about antisocial behaviour (incest, rape, violence, drug addiction, AIDS, homosexual behaviour).

Educators need to be trained to use selected parts of the psychotherapeutic body of knowledge in relating to the student.

Educators need closer contact with research programmes and evaluation programmes in education.

Educators need to participate in educational planning and decision making.

Educators need cultural exchange.

Educators need increased understanding of their role from the public.

Teacher training programmes need to develop new models for further training of teachers.

4. The role of the peer group in enhancing the quality of education

We often define young people in terms of problems and antisocial behaviour; violence, drug abuse, school drop-out, misdemeanours, unemployment, irresponsible behaviour etc. and we often forget all the positive aspects of the age of puberty and adolescence.

Young people in each generation have probably never experienced their life as "easy". However today when society is rapidly changing, young people often become the victims in this process of change. As we all know, change does not always imply development - at least not in the human or in the psycho-social area. The young generation may experience exclusion from a society they are living in and planning to take over in the future. On the one hand they are not young enough and on the other hand they are not mature enough to take on adult responsibilities. Society gives conflicting messages to the young person.

Young people may not always find educational content relevant and meaningful. In addition they are insecure as to whether the future will provide more meaningfulness. The younger generation is becoming increasingly pessimistic. Unfortunately, this pessimism seems to reach down to lower grades in education causing psychological discomfort and less motivation for education.

The age of puberty is usually a very trying time for most parents. The search for identity (personal, sexual, professional...) and independence are the main tasks of the young adult. The onset of a handicap in this age can lead to additional crisis in the family. Teenagers are very sensitive to everything: physical touch, criticism, questions, etc. They feel ashamed of their parents and "step" on parents' most sensitive spots. Parents are supposed to be there to fix practical things, but other than that to be neither seen nor heard.

These years can be regarded as a crisis, but as such growth potential is also inherent. It is through crises and difficult experiences that we grow as human beings and as a society. Family and education need support to encourage young people to adapt to ever-changing situations. To have an open mind. To live with insecurities and to be constructive rather than destructive. Young people must be given the opportunity to handle difficulties on their own without interference and the adult generation must sometimes have the patience to wait for constructive behaviour to take place. Young people must be encouraged to meet challenges instead of practicing "escape behaviour".

Peer group counselling can be offered by the educational psychologist, preferably as preventive intervention. Values can be transmitted by new ways of communicating. Values are not transmitted by the student if imposed, but if experienced as relevant and meaningful in daily living. Examples of new ways of communicating values are, for example, role playing and group work where values can be conveyed to the student in a more experiential and understandable way. Case studies can assess the student's own experience, fears, curiosity.

Youth service centres can teach the young person social responsibility regarding conflict resolution, collaboration, problem solving, relationship between the sexes, health risks with drugs, alcohol, smoking, AIDS, etc.

In summary, what do peers need in order to enhance the quality of education?

Increased communication between educators and peer groups.

Increased participation of peer participation in education;

Continuous peer group counselling by an educational psychologist would be valuable as a preventive intervention.

Social education by educators in peer groups.

New ways of communicating values.

Increased cooperation between educators and youth service centres.

5. The role of the community in enhancing the quality of education

Under this heading, I will deal mainly with the role of the educational psychologist in education. However, education must reach out to many different professional people in the community (police force, health centres, social services, day-care centres, pre-schools, etc.). Constructive channels of communication as well as developing adequate methods of collaboration between professionals are necessary to enhance the quality of education. Shared responsibility gives students access to social services, health services, constructive leisure time activities, future employment.

In Sweden there are 6.300 members of the National Association of Psychology (however, there is an unknown number of psychologists who are not members) and 800 students who will receive their psychology degrees in the next decade.(6) Of those 6.300 psychologists, 1.300 work in schools, or for social authorities (families, children, old people, drug addiction).

Today there is an overall lack of educational psychologists, due to a high work load and a low salary, with the result that many psychologists go on to industrial psychology or open private practices. Educational psychologists may have to be responsible for up to 6.000 students, in addition to parents and teachers. Their work consists of a broad field of tasks: development of schools as working units, planning resources (preventive measures), counselling and treatment of students and peer groups, supervision of school personnel, development of adequate working methods in school, evaluation.

In many municipalities the psychologist is the only person with psychological "competence". When a position is vacant, the whole area is without psychological knowledge. One of today's problems for psychology is the school. However, the trend observed today, and which will influence the quality of education, is that psychologists in Sweden "escape" from school and turn to psychiatry. Furthermore psychologists turn from counselling to occupational health.

In summary what do community services need so far as psychology is concerned in order to enhance the quality of education?

Society needs to allocate more resources to educational psychologists so that they can work with the students' social network (family, peers, teachers) in order to release the students' resources for problem solving.

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(6) Statistical figures received by the National Association of Psychology in Sweden (Stockholm).

Public relations

Information

Communication

The goals for psychology for the twenty-first century are the following:

- Increased importance of psychology.
- Adequate evaluation of psychologists' work.
- Higher salary to encourage psychologists to stay in education.
- Better work environment.
- Focus on society's "right" to psychology.

Dr. Yuan Baohua
Adviser to the State
Planning Commission
People's Republic of China

Deepening Reform and Wider Openings to the Outside World - The Cornerstone of China's Development of Education in the Twenty First Century

Mr. Chairman, Ladies and Gentlemen,

I am very happy today to have this opportunity to be with you and to discuss the issues linked to the development of education in the twenty-first century. Education is an extremely important factor in promoting the growth of a modern economy. Of course, development of education must have development of the economy as its base. Therefore, before looking forward to the issue of the development of education in the twenty-first century, we must consider the prospect of the development of our future economy. I should therefore like to first mention the issue concerning the development of China's economy.

To eliminate poverty, to advance towards prosperity, to wipe out backwardness and to undertake modernization: these are the tasks faced by the countries of the Third World. We must make great efforts to develop education to fulfill these tasks. In the last four decades of New China, by using the force of the socialist basic political and economic system and by relying on a spirit of self-reliance, we have transformed a very poor country into a socialist country on the threshold of prosperity. We have established an independent industrial system with a comparatively satisfactory variety of sectors and a national economic system. Our achievements have attracted worldwide attention. After deducting the factor of inflation, our gross national product (GNP) in 1988 increased 8.8 times, whilst the national income increased 17 times compared with that of 1949. Now China's GNP ranks eighth in the world, the gross value of industrial output ranks fifth and the gross value of agricultural output first. China has 7% of the world's arable land to support 22% of the world's population. As the power of the nation increases, China's education system also develops. Before liberation, the greatest number of pupils and students in schools and colleges was 26.72 million a year. After liberation, this number has gradually increased to 200 million. A sevenfold increase. The last 40 years of New China has produced 6.19 million university graduates and 154.000 post graduates, totalling 30 times that of the graduates attaining the same educational levels from 1912-1948 in Old China. Such rapid development in education has vigorously promoted China's industrial construction.

In order to facilitate the realization of China's social modernization, the Chinese Communist Party formulated a three phase policy of reform and opening to the outside world as well as an economic development strategy for development. By the end of the first phase, China's GNP doubled that of 1980, in order to solve problems of food and clothing. By the end of the second phase at the turn of the century, China's GNP should double again, ensuring the relative comfort of the population. By the end of the third phase, in the middle of the twenty-first century, China should have attained modernization with a GNP per capita at the level of moderately developed countries, the population leading a comparatively prosperous life. On this basis, the process of development will be continued. During the realization of this strategic aim, the principle of giving first priority to the development of education will be upheld and economic development gradually phased to rely on scientific progress and the enhancement of economic efficiency.

Through reform and opening up to the outside world over the past decade the above-mentioned strategic aim of the first phase has been achieved. In the past 10 years China's economic power has been rapidly increased, the living standard of people in both urban and rural areas has improved, education, science, culture, hygiene and physical culture

have developed greatly and profound and historic changes have taken place within the nation. From 1979 to 1988, calculated on constant prices, China's GNP increased by an average of 9.6% per year, much higher than the average growth rate of 2-4% per year of the great majority of countries. The total value of China's foreign trade in 1988 increased to 4 times that of 1987, the total value of China's exports in 1979 ranking 32nd in the world, and 14th in 1988. In these 10 years, after deducting the factor of inflation, the average annual net income of farmers increased 11.8% per capita, the average annual net income of residents in cities and towns 6.5% per capita. The great achievements of these 10 years are the direct results of the implementation of our reforms.

Over the past years, there were some problems in China's development, the main ones being: industry developed too fast; social demand was greater than social supply; the industrial structure was not balanced; price rises were too high; economic efficiency declined. Given this situation, the Chinese Communist Party formulated a policy to improve the economic environment and rectify the economic order. Efforts made in the past year have achieved preliminary results: high industrial growth rates have diminished; agriculture has been comparatively good; fixed assets investment has been controlled to a certain extent; the momentum of inflation has been alleviated; the status of withdrawal of currency from circulation has been comparatively good; the national economy has been continuously developed. However, the present economic situation remains rather grim and we are far from realizing anticipated goals. The recent plenary session of the Central Committee of CPC proposed that 3 years or more be allowed to fulfill the tasks of improvement and rectification. Some esteem this to be at a standstill or even retrogressive. This is a misunderstanding. Improvement and rectification are integrated with the further deepening of the reform, and in turn create necessary conditions for deepening the reform and guaranteeing its healthy development Without reform and opening to the outside world, there would be no modernization in China. In order to better fulfill the task of improvement and rectification, in order to attain the strategic goals of the second and the third phases, the policy of reform and opening to the outside world will be firmly implemented. As to the issue of China's future reform and development, I should like to offer several ideas:

Firstly, our guiding principle must be a policy of long-term, continuous, stable and coordinated development of the economy. We must resolutely guard against being over anxious for quick results and pursuing too high growth rates. First priority must be given to increasing economic efficiency. Of course, we also need appropriate growth rates. China is now at the initial stage of the middle phase of modernization, the ratio of the growth rate of agriculture to the growth rate of industry may be kept at approximately 1:2-2.5. In the coming years, appropriate annual GNP growth rates should be approximately 6-7%.

Second, various reform measures which have proved successful over the past ten years are to be developed and perfected. Future reform will emphasize expanding the power of enterprise, whilst strengthening macro adjustment and control systems. This is consistent with the principle of combining a planned economy and market regulations and is suitable for China. Only in this way can the national economy develop in a sustained, stable and coordinated manner.

Third, we should continue to open up to the future. Despite its vast territory and abundant resources, China's land and other natural resources per head remain at a low level due to the country's large population. Obsolete technology and low capital demands that full use is made of external factors while mobilizing all internal resources within China. If the nation is closed to international cooperation, it cannot be lifted out of poverty and become modernized. Therefore, to follow the road of socialism we must adhere to reform and an open policy. This is the correct policy, which has taken forty years to find, to perfect and to develop and to speed up the development of productive forces. Achievements in economic construction which have attracted worldwide attention over the past ten years are attributed to such a policy. It is not an expedient measure, but is consistent with the immediate and long-term interests of our people and reflects the objective trend of world economic development.

Great accomplishments have been made since the initiation of open policy, mainly reflected in the following areas:

1. Foreign trade has developed in an unprecedented manner;
2. The introduction of foreign capital and technology has been accelerated;
3. Foreign economic and technological cooperation has been promoted;
4. We have established a structure of special economic zones, coastal open cities, coastal economic development, regions and inland areas. This multi-level structure is priority oriented and will advance step by step.

The open policy must be continued to attain the strategic goals by the end of the century and to further achieve objectives during the next century. Therefore, our open policy will not change, but be enriched.

The current emphasis on construction is concentrated in the eastern coastal region. During the next century the focal point will be extended to the mid and western region. The eastern coastal region where conditions are favourable will be developed first, so as to lead to the development of the mid and western areas, as well as the overall national economy.

The mid and western areas, with a vast expanse of forests, grasslands and abundant mineral resources and energy, makes up 70% of China. Forty years of construction since the founding of the nation has brought great progress in transport and communications. Highways radiate in all directions; railways have reached the Xinjiang Autonomous Region and the Qinghai Tibet Plateau and will be extended further. Many industrialized cities have been newly developed. A number of large scale hydropower stations have been built along Yellow River and Yangtze River. The world's largest "Sanbei" Windbreak Forest Belt has been initiated. Sand fixation by grass planting is proving very effective. A rich oil and gas reserve has been found in the Talimu Basin. The climate in the mid and western region is attracting large foreign investments. There are magnificent prospects for future development.

Fifth, we shall continue to implement reforms in the rural areas and perfect an output related contract system in various forms. The essence of this system is to separate ownership and management of production. The major means of production, such as land, will remain collectively owned. Through contracts, management will be split into two levels: unified collective management and management decentralized to the family so as to facilitate separation. The system is consistent with the current productive forces in most of the rural areas and is dynamic. In the years to come, most of the regions of China will adhere to and perfect the system of responsibility oriented to family management. In the regions where conditions are favourable (presently in coastal developed regions and suburbs of some medium and large size cities) management of scale can be gradually introduced on a voluntary basis. Rural enterprises are of great importance in supporting agricultural production, providing employment opportunities for the surplus labour force, preventing population dispersion to urban areas and increasing the income of farmers and will therefore continue to be promoted. Guidelines are as follows: to control the growth rate of development; to make rational adjustments to the industrial structure; to further enhance standards of technology; to improve management and operation; to prevent and remedy pollution.

Sixth, we shall strengthen the construction of spiritual civilization and devote major efforts to developing education. In order to attain socialist modernization and social progress, physical and spiritual civilization levels will be enhanced. The essence of promoting socialist spiritualist civilization is to enhance the quality of the whole nation and to train people with ideals of ethics, culture and discipline. Education is of great significance in this domain and in developing productive forces. China's education is not sufficiently developed. There are 235 million illiterate and semi-illiterate people. Education

should be a first priority, of strategic importance, and major efforts devoted to its development.

Finally, the general reform and open door policy will not change. China will be reformed and opened up to the outside world in order to achieve the objectives of a better standard of living for all by the end of this century, and reaching the level of mid-level developed nations by the next. Efforts will be made to compete internationally, not only drawing upon our own experience, but also on that of the developing world.

Mr. Etienne Copel
France

Teaching Human Rights

Exploited, scorned, beaten, tortured ... Each year, Amnesty International's Report describes the physical and mental sufferings of men and women, and even children, who are subjected to inhuman - quite literally in human - punishment, and often death.

Amnesty denounces, our universal conscience rebels, but the horrors remain. There are those who minimize the phenomenon, remarking that no so very long ago the situation was far more dramatic, whilst spoken of far less. This is doubtless true. Most of the world's greatest dictators are dead, the massacres are more difficult to camouflage and the reports from Amnesty are not completely without effect. They embarrass and inconvenience the torturers and, in this respect, each embarrassment, each inconvenience, is beneficial.

Nevertheless, the world cannot sit back whilst the present situation continues. The human race must learn to respect the laws it has itself decreed.

General Human Rights, the special Rights of women and those of children are quite clearly defined in numerous internationally validated texts, including those of universal applicability, such as The Universal Declaration of Human Rights, The International Covenant related to Economic, Social and Cultural Rights, The International Covenant related to Civil and Political Rights, the procedures for protection established by the International Labour Office (ILO), the International Convention on the Elimination of all forms of Racial Discrimination, The Convention against Torture and other punishment or cruel, inhuman or degrading practices and the very recent International Charter for the Rights of the Child.

There are equally those providing for protection at a regional level, such as the European Convention on Human Rights, the American Convention related to Human Rights and the African Charter of the Rights of Men and Nations.

All these Declarations have either been adopted unanimously by the Members of the UN, or ratified by the majority of the States geographically concerned by regional conventions.

This whole series of declarations and international conventions are now part and parcel of humankind's common heritage. Professor Rene Cassin aptly reminds us that universality is progressively affirmed ... The beneficiaries of proclaimed rights ... are men of all nations and populated lands.

And yet, despite the universal recognition of these texts, it is clear that many States are far from scrupulous with respect to the basic rules set out by these Declarations.

Numerous explanations can, doubtless, be put forward to explain this sad state of affairs. I will mention but one: the international Declaration of Human Rights is so little known because it is not taught. In most countries of the world, no mention is made of these fundamental rights prior to legal studies at the university level. Neither primary or secondary schools, nor state-controlled bodies like the Army speak of them. Whereas, what is more important? to know the altitude of Mount Everest or to learn about some of the articles in the Universal Declaration of Human Rights such as:

"Art.1. All human beings are born free and equal in dignity and rights;

Art.2. Everyone is entitled to all the rights and liberties set forth in this Declaration without distinction of any kind, such as race, colour, sex, language, religion...

Art.5. No one shall be subjected to torture, or to cruel, inhuman or degrading punishment or treatment.

Art.9. No one shall be arbitrarily arrested."

Of course, there are those "free thinkers" who state that all these texts are abstract, intellectual, without sanction... I would certainly not pretend that teaching them would suffice to make people respect the letter of the law. But, I am convinced that a leader who is thoroughly cognizant of fundamental human rights does not react in the same way as someone who is unaware of them, should it be proposed that he apply inhuman or degrading practices. If, as of his childhood, he is instructed, and impregnated with the fundamental values of humanity, if he is thoroughly aware of the value of tolerance, of an open mind... he cannot but take this into account when making decisions.

How can we doubt that, in a country where the traditional abasement of women is common practice, legislators and judges are not influenced if they know these texts? For instance, article 23 of the international Covenant related to civil and political rights which foresees that States having signed it will take appropriate measures to ensure the equality of rights and responsibilities of spouses as to marriage, during the marriage and upon its eventual dissolution. All this, of course, is dependant upon teaching of human rights being sufficiently concrete. It will not be enough to learn the articles of these universal declarations by heart like verses out of the Bible, or rules of grammar. When teaching them, we must make them come alive. Perhaps by citing concrete historical examples, primarily, to render them comprehensible, but also so that leaders who might be tempted to violate basic human rights are aware that, for the coming decades, their crimes will be commented upon in schools, shown on the television, discussed in army barracks.

How can we today launch universal teaching of human rights so that they are put into effective practice in the 21st century? How can we fight against indoctrination? How can we make all children on earth understand that, over and above race, religion and customs, there is a heritage, common to the whole of humanity, into which one and all may delve to enrich their own culture? How can we teach unity? How can we show the way to combat hatred?

All this is not easy and I do not pretend to have a miracle solution. But, it does seem to me that Unesco could have a vital role to play in this respect.

It would without a doubt be desirable to create, for example, a Universal Institute of Human Rights, responsible for "training trainers" worldwide, to gather together all the necessary documentation and to prepare teaching aids, adapted to different cultures and different customs.

We could probably reflect upon methods to incite the different armies of the world to take advantage of the time drafted youth spends with them to intensify the teaching of certain basic values. It is clear, for example, that all people of the world have a stake in understanding that the job of an Army is not to carry iron and fire to foreign lands, but, on the contrary, to protect liberty and peace.

Finally, we could ask ourselves how we can incite those States farthest from respecting Human Rights to organize teaching of humanism. It is probable that subordinating certain economic aids and trade to the implementation of such education could be very efficient. It is always difficult to prove the implication of a State in extortion, but it would be much easier to ascertain that a government does not fulfil its commitments so far as teaching human rights is concerned.

There certainly exist other methods to foster the teaching of essential values of humanity on our planet and I count on all participants in this symposium to propose original and realistic solutions.

Let each of us today be fully aware that the 21st century will be the century of Human Rights.

It is up to us to prepare it. Together.

Professor Rosalind Driver
Professor of Science Education
University of Leeds, UK

Beliefs and action in educational change

One of the briefing papers sets the task for this meeting as follows:

"Taking as its basis the synopsis of world experience concerning the contribution made by the educational sciences and innovation to improving the quality and efficiency of education, the symposium will identify the main qualitative dimensions that would enable education to prepare the younger generations today for the twenty-first century".

The main emphasis in this paper will be an account of the contribution made by the educational sciences and innovation to improving the quality and efficiency of education. However, before presenting such a review it may be helpful to give brief consideration to the challenges young people are likely to face in the next century.

A look to the future

The following challenges appear to be those that are widely acknowledged and ones which education may need to address:

a) We live on a planet with limited resources. These may need to be carefully managed.

b) The world population is continuing to grow, putting additional pressure on natural resources as well as bringing about great social pressures.

c) Human societies affect the Earth's ecosystem in complex ways which we need to be aware of and respond to in the interests of future generations.

d) People are increasingly living in plural societies where stability will require greater tolerance.

e) Enhancement of communication systems can increase the rate of change. (This can take place more quickly than the time required for society to respond intelligently).

f) Medical advances are raising new and significant ethical questions for human societies.

g) Patterns of employment are changing, with greater flexibility required by individuals during their lifetime.

It is now commonplace to suggest that preparing young people for challenges such as these requires an education for lifelong change. What might this mean? Here I sketch a number of features:

a) The knowledge that people need to deal with situations will change during their lifetimes. A willingness to question, to reflect upon and change their ideas may be required.

b) If people are to continue to learn during their lives, learning itself must have its rewards - it will need to have its "pay-off" in practical ways.

c) Respect for evidence would need to govern new learning if people are to avoid being misled.

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d) In order to face change, individuals need a sense of worth and confidence. This is built through experiencing positive achievements, especially during childhood.

e) In a complex society individuals will need to recognize and respect alternative perspectives. Tolerance of different values may be required.

How should education be reoriented?

In the light of the major changes that are taking place, much could be said about what the content of education for a changing future might include. In this paper, however, I will focus on the contribution the educational sciences have made to our understanding of learning and the implications this perspective has for education, borrowing and misquoting a phrase from Marshall Mcluhan "the medium is the message".

Since the 1960s psychologists, cognitive scientists and educators have increasingly found support for a view of learning as involving the active construction of knowledge by the learner. Learners are seen to come to a new situation (whether it is a text, a physical phenomenon or a social experience) with mental representations based on prior experience. These mental representations influence the way the learner behaves in the new situation and determine what is learnt from it. An important example of this is in the field of health. People may have certain beliefs and understandings of how particular illnesses occur and these determine the way they respond to them.

Prior knowledge and beliefs exist in learners in a wide range of areas of life (health and sickness, childbirth and childraising, weather, food, agricultural practices, human behaviour and relationships as well as explanations of natural phenomena - astronomical events, biological processes, etc.). These prior ideas and beliefs are constructed by individuals through their experience with phenomena. They are also socially transmitted through cultural processes.

Research among school children in a wide range of countries in the developed and developing world indicates that in general what is learnt in school may have little impact on these prior beliefs. Learners may be successful in the formal education system and pass examinations, yet school knowledge remains unrelated to their prior ideas and is neither seen as useful nor drawn on to guide action in daily life.

The importance of engaging learners' prior ideas in the learning process is now becoming more widely accepted. Instead of being ignored, these ideas are increasingly being seen as a resource for further learning. Furthermore, learning itself is being seen as involving a change in the learners' beliefs and the development of alternative ways of understanding situations.

In addition to acknowledging the importance of engaging the prior knowledge and beliefs of learners, this emerging perspective on learning also emphasizes the centrality of the learner in the learning process. For most learning to occur individuals need to be motivated to learn and to be actively engaged physically and/or mentally in processing information, reorganizing their ideas and acting on them.

This recognition of the centrality of the responsibility of learners for their own learning is informing the move to more open and flexible learning environments in schools and in continuing and lifelong education. Such learning environments emphasize the following features:

- giving learners the opportunity to negotiate and set their own goals
- providing flexible/open access to resources
- placing greater emphasis on experiential learning

- using new technologies and other resources in an interactive rather than in a transmissive way in learning programmes
- providing opportunities to clarify and reflect on new and alternative ideas and perspectives (either as individuals or in groups through talk, debate)
- placing greater emphasis on action as products of learning activities (i.e. what young people can do as opposed to what they know).

Adopting these features in schools and classrooms as well as in other learning environments will require major changes in educational thinking, practices and provision.

The realization that people's prior ideas need to be taken seriously and that a more action/goal oriented approach to learning may be necessary has been recognized in programmes of adult education such as health education programmes or agricultural development programmes. Here it is recognized that the majority of people's ideas and the practices of a lifetime are not going to be changed by the imparting of some new knowledge. Experience is showing that if change is to take place then beliefs need to be recognized and acknowledged and that changes are most likely to come about through people being involved in action programmes in which tasks are undertaken and the action is reflected on.

A feature of such an approach is the need for awareness of, and respect for the views of other people. Here western science in particular may need to review the way it is projected in the educational world. It may help to encourage a more open appreciation of the diversity of beliefs about such areas as health, agriculture, etc. if western science is to be depicted as a more human pursuit with its controversies, disputes, differences of view and changing paradigms.

Who are the social partners in education?

Schools as institutions have traditionally been set apart from domestic and working life. In traditional societies children learn through apprenticeship with key adults taking part in the round of life. This has its merits as a way of preparing young people for a particular social order. However, it may have limitations in providing people with the capabilities to adapt to change. Formal schooling for its part, though claiming to provide higher level knowledge and skills can equally be seen to be failing as the knowledge imparted is so often inert; learners do not relate it to their everyday lives.

It can be argued that a new conception of schooling may need to be developed; a conception which will value action and yet give learners the intellectual tools to reflect on that action, to be both critical and productive. Such a view of schooling may require a new relationship between schools and other institutions of society, with a greater participation of adults in schools and of young people in activities of work and adult life. Learning opportunities may be provided in a more task-oriented way and may take place in the community and workplace as well as within the school as an institution. Such a change would require not only adjustment to the way school programmes are organized but also would necessitate a reappraisal of the type of training that teachers receive. There may also be a need to consider the role that other adults may play in the educational process.

There are already developments in a number of countries along these lines. In the UK, for example, the Technical and Vocational Educational Initiative (TVEI) has pioneered ways to bring schools and the world of work closer together. Work placements are being undertaken as part of academic study in other countries also. In developing countries the involvement of school children in local development schemes has been explored to good effect.

It would be naive to underestimate the magnitude of the problems that will be encountered in bringing about an education system engaged interactively with its society. However, a static education system at a time of technological environmental and social change may pose even greater problems.

Dr. Peter Ellyard
Director
Commission for the Future
Australia

I am grateful for the opportunity of participating in this Round Table and Symposium on Education for the 21st century. I would like to thank Unesco for inviting me and to the Government of the People's Republic of China and the China International Conference Centre for Science and Technology for hosting this meeting.

As we look towards the 21st century it is important we adopt an appropriate attitude towards it. The Australian Commission for the Future (CFF), of which I am Director has a motto which I believe sums up what I think is an appropriate attitude. This motto is:

> *"The future is not some place we are going to, but one we are creating.*
> *The paths to it are not found but made, and the making of those pathways changes both the maker and the destination".*

While we cannot deliver the whole future we would prefer for ourselves, we can still deliver a fair proportion of it. Provided we take the trouble to carefully articulate where we would like to go; to make a prophecy. What we then need to do is to act to help realize as much of that prophecy as is possible. Therefore the first suggestion I would like to make about educating for the 21st century is that we must better develop our capacity to make visions. To do this is not easy, as anybody who has tried to write a future scenario will know. One of the new programmes we are developing at the Commission for the Future (CFF) is called Visions for the 21st Century (V21C).

I am not going to try to list all the elements which I would like to see in a curriculum to better prepare us for the 21st century. Instead, I will list only a few of the qualities which I think to be important. Between all of us we should be able to develop a fairly comprehensive list. It should not be thought that ones which I omit to mention are irrelevant. In addition I am an Australian. Even though I have lived in other countries, including third world countries, I am a captive of my own experience, as to a degree we all are. I cannot give as realistic a view of the educational needs of developing countries as people from those countries can. Therefore I will not try.

In my work at the CFF we try to consider the major issues facing my country, and its role in the world. However we are rather different to many other organizations, in that we are thinking a generation ahead or longer. This is the second issue I want to raise about qualities which are important for the 21st century. We need to think further ahead than we habitually do. In many cases this will mean envisioning the world I would like to see when my own child is my current age. What opportunities will there be? What threats will we face? Increasingly we will be asked to do this anyway, whether we like it or not. Global concerns about climate change are now forcing us to think 40 years ahead, and to think about actions we need to take now in order to deliver outcomes 40 years ahead. This is one of the reasons I think that the predictions about climate change will actually be a blessing in disguise.

Therefore we need to think in terms of a generation. The world has probably never changed more rapidly than it is doing now. This is mostly being caused by unprecedented rates of technological change. We can expect this rate of change to speed up, and to become more totally global in its nature. Beginning in the 1950s three major technological revolutions commenced, based on the technology of the silicon chip, the manipulation of the DNA molecule, and the creation of new advanced industrial materials.

These three revolutions are likely to be joined by others in the 1990s, as more and more countries develop economic systems dependent on brain power, creativity and

enterprise. Wealth is increasingly based on what one knows, and what skills one has, rather than one's natural resource endowment. Knowledge and skill, both totally dependent on the education system have become increasingly the dominant factors of wealth generation. This rapid change, combined with the increased economic importance of learning, is catalyzing the development of cultures of lifelong learning in first world countries, and increasingly in other countries too.

Rapid technological and social change means that work skills are made redundant at increasingly fast rates. Up to 50% of the skills required in the newer knowledge based industries in particular become redundant every 3 to 5 years. In a 20 year period probably 50% of all job categories will change. Half of these will involve job categories now existing which will disappear. The other half will involve new job categories, not yet existing which will be created. Other jobs, such as bank tellers, will keep their name but the work done will totally change. Technology is also demanding that learning must be broadened. To maintain a robot for example, one needs to know about mechanics, pneumatics, hydraulics and electronics. All of these were individual disciplines and were the responsibility of individual workers. Now technology is causing the demarcation between skill areas to become "blurred". This is happening in almost every kind of work.

Modern products and services are dependent on the synthesis of intellectual property and resources drawn from the arts and humanities, the natural and social sciences, and the technologies. A modern professional worker such as a designer or engineer is required to synthesize knowledge from all these areas in order to create new products and services. Art for example has become as important as science and technology in wealth generation in modern economies, and artists can increasingly sell their artistic capabilities through advanced technology such as CAD/CAM to create new products and services. No longer are they using their skills to produce the traditional products and services of the 19th century, rather than the 20th century.

All of this means that we need to remain adaptable, to be as broadly educated as possible, and commit ourselves to a system of lifelong learning. Increasingly all work will have educational components which enable us to learn for future jobs and opportunities. The adoption of a culture of lifelong learning has profound implications for the primary and secondary education system. The idea that life consists of separate periods of education, work and retirement has either gone, or will soon go in most countries.

This trend will become increasingly important in the 1990s. If primary and secondary education systems are no longer required to provide the basic quantum of knowledge and expertise needed for the whole of life, they will be relieved of a major burden which is currently stifling them. All too often we hear of complaints that school curricular are already too full and that there is no more room for additions. With a system of lifelong education, we no longer have to pack into the years of formal schooling all the knowledge which is needed for success in life. What is important is that people leave school with a desire to be a lifelong learner, and be capable of lifelong learning because they have the skills to access knowledge such as literacy and numeracy. It will then be up to the continuing or further education system to give people the opportunity to be lifelong learners. Increasingly learning in the workplace will be related to the development of systems of career path planning. I expect that lifelong learning and career path planning will become major facets of education in the 1990s and the early 21st century. There are major social justice gains from implementing a system of lifelong learning. People who currently "fail" in the education system will have second and third chances to overcome this disadvantage.

The next critical issue we should address is the nature of learning. A recent paper written by Colin Ball for the OECD Centre for Educational Research and Innovation (CERI) listed three educational "passports" as necessary for individual success in the 1990s. These three passports are:

- an academic passport, which is the traditional role of education, emphasizing the development of literacy and numeracy, and the acquisition of knowledge to enable a person to play a meaningful and self fulfilling role in society;

- a vocational passport, which focuses on education necessary for work, in a world of rapid technological change;

- an enterprise passport.

I should like to discuss this third passport in some more detail, as it represents an additional role for education for most people. Colin Ball and others described an enterprising person as:

> "An enterprising individual has a positive, flexible and adaptable disposition towards change, seeing it as normal, and as an opportunity rather than a problem. To see change in this way, an enterprising individual has a security born of self-confidence, and is at ease when dealing with insecurity, risks difficulty and the unknown. An enterprising individual has the capacity to initiate creative ideas... develop them, and see them through into action in a determined manner. An enterprising individual is able, even anxious, to take responsibility and is an effective communicator, negotiator, influencer, planner and organizer. An enterprising individual is active, confident, and purposeful, not passive, uncertain and dependent...".

Most of our education systems do not currently set out to develop enterprising people. Yet the development of such people would be, to most educators, a primary goal of an education system. I do not know of any education system that has an integrated programme to promote the development of enterprising people. Many cultures are naturally more enterprising than others. Cities such as Bombay and Bangkok are full of enterprising people. Australians, on the other hand, are not particularly enterprising. This has resulted in Australia failing to create enough new products and services to diversify its economy, and as a result of this its international debt has increased.

Australia is an inventive country, for it has fine artists, scientists and technologists who do world class work. However, Australia is not an innovative country. All of this creativity seldom finds its way into new products and services, particularly for export. Innovativeness is dependent on two qualities, that of being creative and being enterprising. While we are good at the first, we are by world standards terrible at the second. Our most creative people are marginalised, outside the major wealth generating systems of the country. Much of this can and is being fixed by restructuring work places and by modifying work place cultures. However, it also needs an educational response, where we focus on the promotion of creativity and enterprise. Some of the skills needed to be enterprising are as follows:

Ball, Plant and Knight

Thinking
Planning
Cooperating
Communicating
Organizing
Problem Solving
Monitoring

Another list from a different source gives us a list of "enterprise skills":

Turner (modified)

Assessing strengths and weaknesses
Making decisions

Working cooperatively in teams and groups
Planning time and energy
Carrying out agreed responsibilities
Negotiating
Dealing with power and authority
Solving problems
Resolving conflicts
Coping with stress and tension
Evaluating performance
Communicating both verbally and non-verbally

To engender these skills we must make changes to the education system in order to encourage people to learn to be enterprising. These skills cannot be taught, they must be learned by doing.

We need to envisage an education system which is a lifelong process in all three passport areas. A recent emphasis in work force education has been the development of the concept of multi-skilling. In the 1990s we can imagine various visas in vocational skills and in enterprise skills being added throughout one's life, combined with the upgrading of academic education.

The development of lifelong learning and a new emphasis on learning to be enterprising will be assisted by the impact of educational technology on the education system. Technology is promoting a trend towards learner driven learning in the education system. Learner driven learning, of course, requires that people already have the desire to learn and the ability to learn. Generally speaking learning will become more active (learning by doing) and less passive (learning by listening).

I now want to examine some of the other changes which are currently underway in the world and which will increasingly dominate the 1990s and the early 21st century. For more than a century, a continuous process of globalization and internationalization has been underway. Increased international travel and increased activity by transnational corporations are but two examples of this. During this time people have transferred their primary loyalties from their town or city, to their region or state, and finally to their nation. Now regional groupings of nations are developing. The most significant of these is the development of western Europe post 1992. This likely to be joined in the 1990s by a similar process in eastern Europe and the Soviet Union.

By the mid 1990s, it is highly likely that a single economic region will exist between the Atlantic Ocean and the Urals. We have all been dazzled by the rapid changes currently occurring in eastern Europe. It is certain that the world's political arrangements at the beginning of the 1990s will be very different to what we would have believed possible as recently as two years ago. Other regional groupings are being contemplated. Australia for example is currently involved in negotiations with the aim of realizing much closer economic, political, social cooperation in its region of Asia and the Pacific. Much of this globalization process is being driven by what I would like to call "economic pull" which involves the rationalization of economic arrangements on a regional basis. This "economic pull" will continue and slowly increase cooperative globalism. However this force is being joined by another powerful force which we can call "ecological push".

Around the world the fear of major global ecological problems is beginning to enforce further cooperation between nations. In the 1990s this is likely to develop into a unifying force of power equal to a science fiction type invasion from outer space. Already an international agreement on the phasing out of ozone depleting substances was completed in 14 months. This success is likely to be added to by an international agreement relating to climate change by the mid 1990s. This will most likely include "Planet Protection Fund" to assist developing countries to deal with this issue. Another way of looking at this change is to consider the fact that fear has changed sides. Fear, traditionally a force which prevents

change and reform, is now becoming a major factor in encouraging cooperation, change and reform.

The end of the cold war is likely to lead to major decreases in military budgets, thereby freeing resources towards the solution of other problems including education, the increased production of consumer goods in the second world, for dealing with third world debt, and for addressing global ecological problems, including hopefully, population problems. We are rushing headlong into an era of cooperative globalism while we are barely prepared for it. There is an urgent need for us to create a paradigm of cooperative globalism, or we are all likely to be trapped by problems caused by national identity. There is evidence already of this occurring. On the one hand, global economic and ecological forces are encouraging international cooperation. On the other hand, there seems to be increased violence and intolerance based on nationalism. Will the unifying of the power of the first overcome the divisiveness of the second? I hope so. Our education system should help to ensure that it does. We need to be educated to give our first loyalty to the earth, to other species and to future generations of the earth, as part of such a paradigm.

I should like to mention one component of such a paradigm, relating to language. Perhaps at long last, the language of an international culture, Esperanto, will find that its time has finally come. We need an international language which is not owned by any national culture. As a native English speaker, I have major reservations about the role of English as an international language. It is very hard to learn and as a world language it is not very cost effective to learn it. It also can cause cultural imperialism. I believe that Unesco should seriously consider promoting the teaching and learning of Esperanto around the world as a major priority towards creating a paradigm of cooperative globalism.

These are a few issues for the education system in the 21st century. As I said at the beginning this does not pretend to be a complete list. I will look forward to contributing more in our discussions.

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Understanding the Predicament of Humankind

The world of the 21st century will be more crowded, more complex and marked by greater uncertainty than today. At the same time, it will be a world full of wonders, including continued scientific discoveries and technological inventions as well as more spectacular communications capabilities.

I assume that, given the pace of change, education should be viewed as a continuing lifelong process. I assume also that the fundamental objective of education is to help children, youth and adults to survive and to do so with what a particular culture regards as the basic minimum of dignity. On that basis, other objectives for education then become possible.

What a cascade of unexpected, bewildering developments these days, political and social! Less and less do our leaders, our systems and institutions seem to be in control. We feel destabilized. Even Nature seems unusually disturbed. Where is it all taking us? We have been travelling very rapidly but have not reflected sufficiently on nor recorded the signs, the landmarks, the changes in the landscape. In a sense education has failed to serve us well.

Changes, especially in the last 44 years, are having more profound effects than we realized - a more than doubling of world population; a bi-polar world replaced by a multi-polar world. Moreover, the weavers seem to have dropped the threads of continuity and coherence, left their looms, doubtful of their patterns. We have moved into what some call "The Great Transition" which promises to carry into the next century. It is time to pause, to get our bearings for the journey, time to redraw the maps and to consider learning in general and education in particular.

The roots of the human predicament (or at least our present analysis of it) are many and tangled. A basic reason for the accumulation of today's problems is that humans everywhere confront those constantly changing problems with old images of thought, old myths, some of which are proving inappropriate for the resolution of the problems.

In the industrialized part of the world, thinking for 500 years has been based on the tacit acceptance of two basic assumptions. First, that the fundamental building blocks of global society are and will continue to be nation states with their presumed all-inclusive sovereignty. Second, that the role of government is largely that of the exercise of physical power and of control over its citizens, including their education. Today, both assumptions are subject to qualification, in large part because of the technologies of information and communications.

For 300 years, moreover, thinking has been dominated, at least in northern and western countries, by what we call The Enlightenment - the rationalist approach of science, technology and the industrial age - to the inclusion of the spiritual realm. This has tended to fragment the world, reduce attention to spiritual ideas and to promote human arrogance. Human beings have been treated as one more resource to exploit, to dissect and to manipulate. The physical environment has been considered simply as ours to dominate. What is called the modern way of life "is based on stolen goods, hidden costs and deferred payments". Humans have avoided acknowledging this by keeping dishonest accounts.

In the developing world, a clash and ambivalence between models adopted mainly from the North and traditional values and myths make difficult the exploration and

demonstration of problem-solving and survival with dignity. Education reflects this ambivalence.

A crisis of governance

Within the current crisis of civilizations - of previously accepted explanations of the meaning of life and of relationships among living beings - the most critical challenge comes from degradation of the environment. That highlights and aggravates a crisis in governance. Is planetary society governable? Can humans practice self-governance in a complex world and, at the same time, can they learn to "govern evolution"? The latter task is forced upon us because of the irreversible changes in the fundamental make-up of what was the "natural" world caused by radical human interventions.

Education in most societies has usually been seen as one of the principal means for assuring the continuance of the existing system of governance. Since the instruments of that governance (mostly in the hands of governments) are being questioned everywhere, education is also on the defensive. While "nations" - the foci of cultural identity - seem likely to proliferate, the "state" as we have known it is likely to decline as the principal actor in the system of governance.

Challenges which Education Needs to Take into Account

1. How to explain and advance knowledge about the changing, threatened and threatening environment?

2. How to help individuals and groups deal with the increasing volume and velocity of information and with the shifting structures of knowledge.

3. How to help individuals and groups to confront and resolve the ethical/moral challenges raised by new technologies and by the growing number of linkages among peoples and their diverse cultures?

4. How to secure benefit from increasing tensions between localization and globality? A world with an increasing number of "villages" turning to greater self-reliance can be a positive factor while at the same time needing a global awareness and more multilateral cooperation.

Characteristics of a New Paradigm to Guide Education

1. Learn How to Learn

Societies and especially their governance mechanisms, must be seen essentially as "learning systems". Those societies most likely to succeed will be those whose "learning capacity" is high - flexible, with an ability to anticipate, to understand and adapt to change; active participation of citizens in the learning process. In the course of such learning, history will need to be rewritten and re-interpreted.

2. Learn the Global Context

Societies will need to accept and live by the principle of solidarity - that there is one human family in which all beings are to be embraced in consciousness while respecting and celebrating diversity. Solidarity will require the reduction of inacceptable inequities. The same principle embodies the concept of the wholeness of the planet, its geosphere and biosphere.

3. Learn Self-Awareness

Individuals and the groups of which they are members, in order to be able to participate in "one world of human solidarity", will need a solid base of self-awareness, of comprehension and appreciation of their own cultures.

4. Learn Local Self-Reliance

A danger in the present world system is that many human and other resources are overlooked or even consciously excluded through excessive centralization and partial accounting. The re-integration (and re-enchantment) of the world will be based on self-reliant exploration and utilization of natural resources and imaginative, innovative ideas, if only so that humankind can feed itself. Such communal self-reliance will require a capacity on the part of individuals to see themselves as servants of the community. The most important servants will be those who serve as mediators and interpreters of information, relay and routing nodes for that information, philosophers of human solidarity, conflict resolvers.

Practical Implications for Educators

1. There should be further development of science teaching, environmental education and human rights appreciation.

2. In all phases of learning including formal education, women - their current and potential contributions to development - must be given priority.

3. More comparative research is needed, especially on the brain, on learning technologies and on pre-school education.

4. Education will need to take account of the probable divisions in the world during what will be a period of turbulence. While some societies will be learning to be part of the whole, others will be living superficially or largely for and within particular groups - whether traditional "nation states" or corporations or "gangs". Even within societies there may be a dualism: on the one hand, groups, mostly geographical, who are relatively self-reliant and self-aware but also sensitive to the global context in which they exist (including its future dimension). At the same time, there will be other groups who are relatively unconscious either of themselves or of the state of the planet, living for the present. These latter will be groups which have concluded that survival is an affair limited to a tribe, a caste, a geographical area or even a nation-state.

5. Education has a responsibility to make a special effort to correct a deficiency: a lack of knowledge in most societies of the phenomenal growth in multilateral cooperation and institutions of all kinds - intergovernmental and independent, voluntary citizen initiatives. These constitute an important aspect of solidarity.

6. Another responsibility of the education system is to correct the imbalance in information reaching citizens. The mass media emphasize the shocking and the negative. Learning and the building of human solidarity requires that we hear more of the constructive enterprises of humankind.

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Among human values there are those which are historically evident. This can first be applied to the sphere of education which is the source of intellectual progress of every society and of every social system. It is for this reason that it is important to determine social priorities of a given value, especially in relation to research into new technologies and different variants of approaches within the national framework, as well as within international projects and cooperation.

This is even more important today when mankind faces the vital problems of security, environment and social stability. And if our generation does not solve all these problems then we will have to teach the new generations to look at them from a moral point of view.

Education and intelligence go together hand in hand. Therefore the main priority of education, the main social value, must be humankind. Man's hour has now come. He has come to the threshold of understanding his personality, his place in the world and his historical mission. On the threshold of the 21st century, intellectual values should become the priority of social security of personality, for education unprotected by society will fail to protect society itself.

Let this thought become the starting point of our discussion.

Every society solves the problems of education in its own way, because of historical traditions, cultural spheres, scientific and technical progress, social needs. All these elements exist in every society, but each society has its own specificities. Some reach the summit of knowledge, others stop in their development, some step back and fail to overcome the crisis.

Such a crisis in education is now influencing our society. When the Soviet Union took its first steps, it was poor and isolated, 20% of the budget being spent on education. Today, when our society is supplied with food, clothing and other goods, education's share of the budget has decreased by 5%. A question arises. Is it true that socialism gives such an immense intellectual stimulus that there is no need for society to spend money on education?

This is far from true. Our socialist society is a long way from high intelligence, culture and real education. There is a lack of professionalism, a lack of scientific bases for many governmental solutions. The concept of education is still sailing on the waves and the storms of emotions surrounding it.

Let me give you the statistics on Byelorussia which, in the sphere of education, is considered to be the most satisfactory in the Soviet Union.

The republic needs an additional 300.000 places in schools to provide the normal conditions for education. School requirements for microcomputers are only satisfied by 10%. School children have no opportunity to choose their subjects, teachers or the schools they wish to attend. Such a closed educational framework oppresses the initiative of the teachers and the school children and kills the talent and the ability of personal thinking. 100.000 specialists of higher and special education are employed in fields not connected to their level of education. At the same time, 40% of engineers and 50% of plant managers have not undergone higher education. There is only one solution - to make education more democratic. We have chosen this particular solution.

One more point is how we understand the concept of making education and its particular component - the national system - democratic.

There are deep differences within education, different trends and programmes, special forms and teaching units for gifted and talented children, should be given more opportunities. Only on this basis can the intellectual potential of society be revived.

The first steps towards this are being taken in Byelorussia. One quarter of schools and classes take differential education. In the near future this kind of education will be applied in 50% of schools. There are new educational structures for high schools, functioning on the basis of universities. At present such structures in the field of philosophy, physics and mathematics have started to function. Different educational structures called integrated structures are being set in place in technical colleges and professional schools. The idea is to give the process of education a permanent impetus to move from one grade to another.

Gifted children are annually given an opportunity to participate in the Olympiads on natural, humanitarian and social subjects. The winners are awareded the right to study in high schools without passing an entrance examination.

Special attention should be given to the creation of national lyceums where in-depth study of national languages, culture, history and literature is planned. This is a planned project.

In this connection it is necessary to stress the importance of national educational complexes from the point of view of the formation of international educational projects. Applied to Byelorussia, that offers a great opportunity to include all citizens who at present live abroad in the national system of education. This is a great task which will help develop national culture, language, traditions, and new steps towards better mutual understanding and cooperation. Today's new ways of thinking reduce all barriers between nations. People should be free to communicate independently of the state or politics, and in this respect, the educational system can make a considerable contribution.

But this is only one way. Alternatives may be found. For this reason the idea of international lyceums for gifted children seems very effective. The concept of the intellect is an international and human one. The most talented and gifted should receive the best. As every state takes care of educating its youth, this is a question for mankind. The world on the threshold of the 21st century is a world mainly geared towards intellectual improvement and the world of education therefore has priorities in every society. By developing the educational system, we build our common home and create a strong humanitarian basis for existence. The important task is to develop the personality and with what guarantees? We base this task first on concepts of moral and human values.

A special role is being played today by environmental education. Nature needs protection and it can only be protected by educated people. This is even more important when we are periodically faced with the collapse of ecology and with territories and regions at a high ecological risk. The problem of Tchernobil is for us just such a problem. Under the conditions of a new social psychology - radiophobia - we face the need for a basic change in specialist tuition. At present general environmental education has been introduced in high schools in the republic. But this is only one step towards an environmental culture. In the Tchernobil region, scientific teaching centres with medical and biological branches are planned with concrete regional tasks for specialist education. However Tchernobil is already far beyond the framework of a regional environmental effect. Here we need a strong sensory stream, perhaps under the guidance of Unesco. How can its effectiveness be ensured? Perhaps in the framework of a project to establish an international scientific centre to study problems in this field.

The field of education is a great experimental area. Whilst we develop a system educational technologies are changing. 90% of all great historical discoveries have occurred in this century. The impact of information is so great that even modern computers fail to work with all of it. This does not mean that we should be pessimistic in our estimation of

the development of personal abilities. But we have not reached our intellectual limit, which will come when one billion people inhabiting the earth no longer starve, when we cope with cancer, and wars become a page of ancient history books. We all agree that we are far from this. All this will come about through education of the personality.

It is a paradox that modern society does not need a great number of educated people. The selection is made from the so-called "top of society", which does the necessary intellectual work. The others either have to implement this work, or provide partial functions. It is evident that part of the population does none of this work at all. Such trends vary in different countries, depending on their level of development. In short, society does not often balance its demands and abilities with the demands and abilities of its people.

There may be another approach to the problem. Approximately every 10-15 years the demands of the level of education change, due to the development of science and technology, social development, foreign and domestic conditions. These demands may be taken into consideration or ignored. Different disproportions and contradictions quickly arise.

These processes and problems should be researched from a sociological point of view, with a permanent consortium for the study of such phenomena.

I shall cite here only one problem out of many. Let us take the functional level of an educated person, a level reached by only 10% of world specialists. By "functional", I mean primarily general culture, social level, range of political interests, esthetic needs and demands for original solutions and approaches. This is almost an educational ideal.

For this reason the sociological chain of the study of the phenomena should answer the following questions: "Who do we teach, how do we teach them and by whom?". At present we have sufficient educational systems and experience, which require a sociological study. It is easier to understand educational technologies. They are used for tests, for principles of selection, programmes and structures. Here the essence lies elsewhere. It is how to understand the social essence of education, its relations with society, priorities of the level of social groups, the needs of international cooperation, etc. In Byelorussia stress is placed on this problem, with no contradiction of new technologies. According to sociological tests almost 50% of parents now consider that the priority of education in society has been lost. If it is true that education should be socially defended, there is a parallel move from ordinary teachers in the republic for the revival of education. This process goes under the slogan: "Free school, no supervision of schools, everything at school - a teacher chooses its pupil and vice versa, plurality of programmes and educational forms, etc."

Today the important problem for sociology is not only the personality of the pupil but also that of the teacher. For this reason a special subject for study is the problem of teacher training for schools and their adaptation to the school. In our republic approximately one third of postgraduates trained for pedagogical activities, after a period of time, change not only their place of work but also their specialities. There are a number of reasons for this: low prestige; lack of a system of pre-high school selection, together with the system of selection of gifted youth during education in pedagogical institutes. Here we refer to the problems of social, economic and living standards of young specialists. These problems in respect to urban and rural areas are rather specific and are fields requiring a serious sociological study.

The sociology of educational innovations as we see it is not only a field for special study of the dynamics of the development of new structures of education and technology, but is much wider and should cover the whole sphere of teachers' work, the relations between society and the teacher, the teacher and the pupil, the teacher and other teachers, the parents and the school and school and society. It is clear that for different social systems these problems have many common points and their study would be useful as an international project on the sociology of educational innovations.

The basic centres for the realization of such a project could become the research centres for universities. There is such a centre in the Byelorussian State University carrying out research on students' problems of family, culture, education, upbringing, adaptation, professional tuition, non-formal levels of activities and communication. It would be important to establish a general or joint centre under the guidance of 5-6 large European universities including the Byelorussian State University. We are ready to discuss points of a future programme for research and a form of sociological information exchange. We hope that the establishment of such a centre could contribute to the development of new education technologies and forge new links in the field of international cooperation and information exchange.

New opportunities for the development of an open system of education could open up society itself, as social progress takes on an international bias with an intensive exchange of ideas, information, culture and values. New political thinking is a qualitative leap forward for our civilization. It demands study on how to help each other. Although this road is a difficult one, we have chosen it.

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1. What are the challenges which face humanity in the next twenty to thirty years?

The most important challenge is that of realizing that technology, especially the technology of mass destruction in war or in plundering of the resources of the planet, must be subordinate to strict, international control. All armies must disappear, except for an international police force under the United Nations.

Similarly the technology of defoliation and deforestation, of the rampant misuse of limited resources: oil, water, air, food, must come under international control.

The second great challenge is the universal realization that modern health care has brought a terrible imbalance between the number of people on the earth and the means of the earth to sustain them. Thus we must abandon the dictum behind utilitarianism of the Benthamite or Marxian kind, namely:

"the greatest happiness for the greatest number";

this must be replaced by:

"the greatest satisfaction in life for the optimal number".

2. Given these changes, how should education be re-oriented?

The most important thing is that there should be a universal, international, standard curriculum, under the auspices of the United Nations. In particular, the standard curriculum should be promulgated by a series of universal standard textbooks developed under the auspices of the United Nations.

History should no longer be taught as the story of nation states but as the story of humanity. An Englishman should learn to see history from a Chinese point of view and a French point of view as well as from an English one. And similarly, a Russian should learn to see history from the point of view of a Latvian of a Pole or a Frenchman or a Chinese. We inculcate hatred of foreigners and of those with whom we have fought in the past systematically in our schools.

Our primary allegiance must be to our common humanity and our amazing animal species.

The official United Nations languages should be taught in all schools, from the earliest moment possible, alongside the local language.

The international standard textbook series should be aimed at the following two principles:

a) whatever is offered must be at the highest standard (in mathematics, language and literature, history, science, business, etc.);

b) the selection must be very careful and thorough, but not too much should be taught. Rather, what is taught should be taught thoroughly and completely.

3. Universal ethical and moral values

Our first duty must come to be seen as care and concern for our common humanity.

The most important implication of this is that we must have universal care and concern for our fragile planet, since this is all that sustains us.

Thus it must come to seem immoral for Catholics to hate Protestants in Ireland, or Muslims to hate Christians in the Lebanon, or Hindus to hate Sikhs in India and vice versa for each. And it must come to seem immoral for us to have so many children that we threaten each and every one of those children by tiny, incremental bits.

4. Scientific thinking and thinking in the Humanities

It is a mistake to think that there is universality in scientific thinking. It is only in scientific results that there is an approach to universality. It must come to be realized that there is nothing essentially which separates, as regards thought, the humanities, the sciences and the arts. Creation and creativity in each require similar and overlapping powers. Thus there is no real split between the sciences and the humanities as is sometimes alleged.

5. Qualities of Young People Necessary to Face the Probable Demands of His or Her Future Professional, Social and Cultural Life?

The most important thing is the deep sense and knowledge that one is first a citizen of the world. There should be only one passport, a United Nations passport, within thirty years. But this can only be accomplished if there is a standard, universal school education for all so that we all have a common experience in growing up.

6. What is the contribution of education to reducing inequalities and promoting respect for people of all types and occupations? And how can excellence in education be promoted?

Again, the only way is for everyone to have the same basic educational experience for their school years, everywhere in the world. This means that there must be a standard, international programme and that historical, anthropological and sociological material must be taught from an international vantage point and not a national one. Nationalism has been the great danger to humanity in this century and remains so. Its force and danger is growing, not abating. This does not mean that great empires, whether state capitalist or company capitalist can use this as an argument to keep smaller countries in thrall. One, naturally, cannot wipe out our love of country or language. But one should learn to see that by loving one's country or language as one does that others can love theirs too and for the same reasons.

Again, only a standard, international curriculum can move us towards a universal understanding.

Excellence can also only be promoted if there is a single, very high, international standard to point to in each local place, in each school - whether in the distant north of Canada among the Eskimos or in the deepest part of Zaire in Africa.

7. How can young people today be helped to develop their judgement when they are faced with an increasing flow of information from the media and to participate in a responsible manner in the life of their society and the international community?

The real difficulty with the media is that it tends to have a local or regional or national bias. The only way to get around this is if all schools are committed to a larger, international goal and if they systematically demonstrate the biases in the local, regional or

national media. This again demonstrates the need for a standard, international textbook series and a standard international curriculum with standardly trained teachers.

8. **How can the gap be bridged between the skills and training of teachers and the needs of future society?**

The difficulty with training for the "future" is that the future is, strictly speaking, unpredictable. Who could have thought in the middle of the seventeenth century that Isaac Newton would transform the world? Who could have predicted that penicillin would be developed and transform, during the Second World War, the treatment of convalescents and the recovery from wounds? Who could have predicted the advent of the computer, of the laser, and indeed, of the atom bomb ten years before they were developed?

Since, therefore, the most significant developments are never in any important sense predictable, education and training cannot be for a presumed or predicted or anticipated future. Instead, they must be general, liberal and of the highest standard possible. We have nearly three thousand years practice with education in the West and the East can add a couple of thousand years to that. We are not ignorant of what the best kind of education is. And, echoing the Paidiea Proposal of Mortimer Adler of the Encyclopaedia Britannica:

"the best education for the best is the best education for all".

I doubt if anybody here has any real worry about what the best education for the best is, wherever you come from. Though, of course, there will be room for dispute over details.

Teachers, therefore, must be trained to teach the standard, international curriculum which is aimed at the best, the brightest and the cleverest of our children. But they must also be trained to get the best out of those who are handicapped, slow learners and the like too, so that they can come as near to the achievements of the brightest and the best as is humanly possible for them.

9. **What could be the new, fundamental concept of education for the different social partners? What should be the role played in education by the family, enterprises and professional organizations, the media, religious and cultural associations, the state administration and the military sector, And what relations should schools maintain with them?**

Until we have a generation which has passed through a standard, international curriculum we will not have a generation which thinks, except in the old, and ultimately fatal for humanity, terms. Thus what we want ideally is the willing agreement of the various partners in education, the family, professional organizations, religious and cultural associations, the state administration and the military, that they will support the internationalization and standardization of education for all our sakes.

In our lifetime a Protestant father or mother may continue to hate their Catholic neighbours and vice versa. But if Catholics and Protestants go to common, non-denominational and internationally oriented schools, there is no reason in the future that they should continue to do so. But, of course, in this example, the leaders of the protestant and catholic churches must support this internationalization and the withering away of hatreds.

Ghandi's remark to a Hindu man who felt terrible about killing a little Muslim boy was that he should take into his home a tiny Muslim boy and raise him as a Muslim, is the sense of how the family must adjust if we are to have a world in which we can all live in peace, prosperity and satisfaction into the next century and beyond.

III. Papers Presented at the Symposium

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The Future of Education in Asia and the Pacific

Educators and other social reformers have long been claiming that education plays a crucial role in contributing to the realization of national development goals. Social scientists have developed theories to support that claim. The human capital theorists (e.g. Theodore Schults) and the modernization theorists (e.g. Alex Inkeles) have provided convincing models to show that education enhances development. The human capital theory postulates that the most efficient path to national development lies in the improvement of the country's population. And of course, educators and almost all socio-economic planners are convinced that the best way to improve the population is through various forms of education and training, in particular, and human resources development, in general. On the other hand, the modernization theory states that there is a direct relationship between education and socio-economic development in that education brings about a change in outlook in the individual which promotes productivity and work efficiency.

Development in the Asia-Pacific region, and the whole world for that matter has been lopsided in favour of the Western Industrialized Nations (WINs) vis-à-vis the Third World Nations (TWNs). One then wonders if education is better conceived, implemented, evaluated and replanned in the WINs vis-à-vis those of the TWNs.

Mr. Makaminan Makagiansar, Assistant Director-General and Director, Unesco Principal Regional Office for Asia and the Pacific used to say that if education is to really have the desired impact on development, then it must be the engine that pulls the development train, instead of running after the train. Implied is the need for education to be future-oriented. This is also the view propounded by educational leaders in the region. Unesco has therefore commissioned studies and organized symposia to reflect on the future of education in Asia and the Pacific. In addition, many eminent educators and scholars on their own made similar studies and reflections. These studies and reflections have been reviewed and analyzed in this paper to visualize different building blocks for developing alternative future scenarios for education in the context of the Asia-Pacific region.

Schools of Thought

Among the salient features noted by the author in the course of the review and analysis of works on the subject is that there appear to be four schools of thought regarding the future of education. First, those few who believe that "whatever will be, will be". This idea is entertained largely by people who, for reasons of the existing difficult political and socio-economic conditions prevailing in their country, cannot afford the luxury of worrying about the future. It also consists of people who argue that the past is gone and the future is not with us, so why worry about those. Second, those who think that the events of the past and the present are dynamic forces that help shape the future. Scholars in this camp feel strongly that the future could be projected and extrapolated on the basis of established trends and developments. This appears to be premised on the assumption that observable incremental changes and on-going innovations and reforms are more reliable and valid bases for predicting the nature of education of the future. Third, those who subscribe to an if..... then ..... proposition. This group tends to envision alternative scenarios ranging from the pessimistic to the most optimistic. This group adheres to a social engineering framework which takes into account all social, economic, political and cultural factors influencing the

development of education. Fourth, those who believe that the future does not exist, and therefore it could be designed, shaped and even controlled. They argue that man cannot change the past, but he can influence the future. The future then is a matter of deliberate choice rather than a case of chance.

There was, however, difficulty in putting names of countries in the above categories, as in some cases educators and scholars, even within the same country, belong to different schools of thought.

Scenarios

Most of the studies reviewed and analyzed depicted alternative futures or scenarios, i.e. (i) optimistic, (ii) pessimistic, and (iii) the most probably, and that there are a few vital spokes that support the wheel of the future of education such as science and technology, educational technology, indigenous development, development and traditional values, equity in education, education and national unity, education and culture, education and economic progress and education for all. These spokes are, however, not always fashioned uni-directionally. Dilemmas and contradictions are inherent in many of these elements of the future of education. The extent to which a country succeeds in resolving such dilemmas and contradictions, and in overcoming potential obstacles, would determine the future educational scenario - ranging from optimistic to pessimistic. In many of the studies/literature reviewed, analyses of the constraints were made, and how to transcend or avoid those, and consequently the alternative paths towards optimistic scenarios are systematically planned. However, some educators and scholars think the country's resources (natural, manpower and financial) are far from adequate to cope with formidable stumbling blocks, and hence they paint a pessimistic scenario. Other thinkers see that some of the potential problems could be solved, while others will persist for some time, and they then settle for a most probably scenario.

The author identified and analyzed some of these contradictions, taking into account the scholarly thoughts of selected educators in the region. This was done for two main reasons, namely: first, these dilemmas are crucial decision points that need to be resolved to pave the way towards the realization of preferred future; and second, to prepare precautions that could help minimize the anticipated adverse impact that is likely to arise. Some of the major problem areas are briefly discussed below and in the pages which follow.

Science and Technology

Investment in science and technology is invariably on the agenda of many countries in planning education for the future. There is a widespread recognition that developed countries have been benefitting greatly from such new fields as micro-electronics, computers, bio-technology and new sources of energy. A scholar from Bangladesh asserts that developing nations may be left even further behind if they do not keep abreast of these new developments and take steps to harness them for their economic salvation (A.M. Sharafuddin, 1986).

An eminent Indonesian scholar speaks of a revolution taking place based on bio-technology, micro-electronics, and materials technology. He thinks that if the countries of the South do not develop the capacity to participate in the revolution, they will become even more vulnerable and dependent on the North than now (Soedjatmoko, 1985).

A Chinese scholar stresses that China's educational reform campaign is not likely to go very far unless it coordinates and positively interacts with the reform of the economic structure and the structure of science and technology in the country. He recognizes that China's modernization drive is an ambitious eagle, and that education and science and technology are its wings. Without strong wings, it is impossible for the eagle to fly high and far (Wu Wei, 1986). It is to be noted that one of the focal points in China's four modernizations is on science and technology, the others being industry, agriculture and national defence.

A group of Korean scholars referred to a world entering the second industrial revolution spearheaded by "electronics, mechatronics, and bio-technology". While the first industrial revolution replaced the human hand, the computer is an extension and/or a substitute for human cybernetics or brain, and modern communication technology is an extension and/or substitute of the human nerve. Education should, therefore, do its part to install scientific consciousness in people (Yun Chung-il, Kang Moosub, Chung Il-hwan and Kim Jae-woong, 1985)

However, the phenomenal development in science and technology tends to accentuate the materialistic tendency of humankind. A prominent Malaysian educator thinks that the force of materialism brings with it a new rationality and modernity that erode and, in some cases, destroy social institutions with its traditions, its value systems and its morality. In the process of adapting to the material order, man has compromised his traditions, morality and value system. There is a growing tendency for educational systems to gear themselves mainly to the dictates and demands of the material order (Tan Sri Dato Haji Murad bin Mohd, Noor, 1985).

Some scholars, therefore, think that a desirable future education should equally stress, side by side with science and technology and development, the motivation and preservation of human values. A Korean scholar thinks that the future education needs to put emphasis on the harmony of science and ethics. A new spirit of humanism in the age of materialism and scientism will have to be cultivated so that humanism may become an inseparable part of man (Sun-Chick Hong, 1987).

In charting the future of education, other scholars are also concerned with how much of ideology is to be blended with how much of scientificity. Ahmed et al asked "Can one have an outward looking socio-economic structure and an inward looking educational policy?" (Ahmed Prakash, Burman, 1987). This dilemma is particularly true in countries which put a premium on religiosity e.g. Islamization, while at the same time emphasizing science and technology particularly in secondary and higher education.

Likewise Jayasuriya cited the observation of a Sri Lankan seminar that "Society in the 21st century would be exceedingly complex largely on account of the advances in science and technology that would take place in the years that lie ahead. It would be a highly competitive society in which groups would vie with one another for power and the enjoyment of material goods. Human values and considerations would have no place and the ethos would be one of super-industrialism. There would be an information explosion, but few would be able to take advantage of it. Power would be concentrated in the hands of an affluent minority, and the masses would remain ignorant and exploited. Pockets of poverty in the world would remain much the same as they are at present or even become more marked and pitiable, as the forces of science and technology would not be harnessed towards their elimination. Over-fascinated by science and technology that would provide mass entertainment and excitement, there would be little or no enthusiasm among the people for actively pursuing cultural and religious interests. Traditional values such as respect for parents and elders would disappear, and monetary values would reign supreme" (Jayasuriya, 1987).

Educational Technology

It should also be noted that in many developing countries, planning education for the future invariably includes anticipation of the use of educational technology such as television, video recording systems, computers in the teaching-learning process. However, the reality in many developing countries is that only a few elite schools will be equipped with such modern electronic educational gadgets. This will tend to widen the gap between the children of the small elite group vis-à-vis the children of the poor which constitute the bulk of the population. This then poses further threats on the quest for equity in education in many countries of the region.

The disparity will not only be within countries, but between and among countries in the region, especially between the developed and developing countries. VTR systems, communication satellites and computers are now widely used at the school and university levels in Japan (H. Iwaki and Y Hamano, 1985) and in Australia (Ian Birch, Mike Lally and Keith Punch, 1985); while many developing countries are still struggling even only with the use of radio in school education. In some countries in the region even blackboards, chalk and other basic visual aids are acutely lacking.

Development and Traditional Values

Development is one of the ultimate goals of education for the future. However, development has at least two main components, namely (i) economic development, which is materialistic in nature; and (ii) socio-cultural, which is by and large concerned with the preservation of existing institutions e.g. family, marriage, rural village life, cohesive and harmonious neighbourhood as well as the cherished values, customs and traditions of the country.

Some countries in the region have indeed attained unprecedented economic development. By virtue of higher per capita income, people appear to be economically better off. However, many complain about the erosion of many desirable cultural values which have been handed down from generation to generation. These include lack of respect for parents and elders, graft and corruption, drug addiction, deteriorating sexual behaviour, criminality, etc.

Some scholars think that cultural values need to be modified in line with socio-economic development. For example, an eminent social scientist from the Pacific contends that the whole idea of growth and development is bound to bring about continuous change of technologies and value systems. (Epeli Hau-ofa, 1986). He, therefore, suspects some insidious motives in the seemingly human concern for the preservation of traditional values of the Pacific islanders, including keeping sections of the communities contented with their relative poverty and oppression. He cited some of the traditional values of islanders which are often inconsistent with the quest for development. These include (i) primacy of group interest over those of individuals; (ii) sharing of goods and services; (iii) sense of place and social continuity; (iv) intimacy of personal relationships; (v) flexibility of social relationships; (vi) self-sufficiency and self-reliance; (vii) caring for members of societies, e.g. the aged; and (vii) indigenous religious-based entertainments. In a few countries in the Pacific, the school curriculum has been modernized in keeping with those of developed countries, e.g. Australia and New Zealand. One then wonders if that has contributed to irrelevance of young people to their own island setting and hence the migration to Australia and New Zealand continues in a big way. It is said that there are more Cook Islanders in New Zealand than in the Cook Islands.

In an effort to preserve cherished socio-cultural values, a number of countries have emphasized values education (e.g. Philippines), or moral education (e.g. Japan and Republic of Korea). One of the main projects of the Southeast Asian Research Review and Advisory Group (SEARRAG) is to study the "State of the Practice of Values Education in Southeast Asia". One such study in the Philippines was completed in 1987. The study concluded, inter alia, that "there seems to be more systematically organized programmes of value education in the country compared to the previous decades. There is a wealth of innovated approaches to values education (Sutaria, et al, 1987).

Values education, however, is not a monopoly of the school. In most cases, the family, church and community/society play even more important roles. If one looks at the family, church, community/society and school as constituting a quadruple of influence on the young, the family ought to be at the peak. Unfortunately, the school often unnecessarily duplicates what is learned in the home, instead of merely reinforcing it. Many children get bored in relearning what they already know. There are also those who think that values are

better caught than taught, and therefore the family, church and community/society must provide the social atmosphere conducive towards fostering desirable value behaviour standards. Paradoxically, sometimes the school negates values learned at home; for instance, cooperative ethic is a virtue stressed at home, but competition ethic dominates in the schools.

This is not to argue that all values need to be preserved as is. Indeed many countries in the region are in the midst of re-examining age-old beliefs and values that appear to be formidable obstacles to development. As David Reisman said in his book The Lonely Crowd, tradition-oriented groups are static societies that change very little which is not what most countries, if not at all, in the region want.

Indigenous Development

After World War II, there was an upsurge of nationalism which invariably led to liberation of colonial lands and political independence for many countries in the region. This also meant efforts in some countries towards educational reforms in line with indigenous development, including the use of the national language as the media of instruction. However, to some extent the use of the national language tends to restrict the free flow of scientific knowledge from other countries, as efficient and accurate translation is often a constraint.

Some countries, however, are politically independent, but remain socio-culturally linked to the former country-colonizer. In the case of the latter, there is an increasing concern for the continuing influence of what is referred to as metropolitan power. Promises of increasing aid and assistance from developed countries are the beginning affiliations that could influence education significantly. Foreign books, overseas television and video programmes cannot be without effects on the values, cultures and tradition of people in the recipient countries (Tupeni L. Baba, 1986).

In many of the developing countries, they not only import educational technology hardware, but also the software, such as video cassette tapes, foreign books and journals, which tend to prepare people not only for working, but also for living in developed countries. This may be good for the privileged few, but not for the country, especially as those who leave the country for good are the better educated who could have helped in their country's development. Brain drain in the developing countries invariably means further impetus for socio-economic development to the Western Industrialized Nations (WINs) and is detrimental to the indigenous development of the Third World Nations (TWNs). Hence the widening gaps between the WINs and the TWNs.

Equity in Education

Education for the future invariably includes provisions for equity. It projects better equality in both opportunities and access. For many countries, certain groups, e.g. lower caste, girls and women, are deprived of educational opportunities. Most countries are now taking steps to rectify the situation. However, in many countries such provisions hardly go beyond lip-service, as equality of access has not been adequately made available. For instance, many remote rural and isolated rural areas do not have schools. Primary education is compulsory but not really free. Many poor children cannot go to school as they have no clothes, and/or the school is too far from their homes. An Indian thinker concludes that despite the development of scripts, paper, printing and other means of storing of and access to knowledge, the ideal of universalization of education has not yet taken root (S. C. Dube, 1986).

Moreover, in many cases school learning is only relevant to the needs and requirements of those who are expected to ascend the educational ladder, but hardly for those who will leave school upon or even before completion of primary schooling. In some instances, schooling makes many young early school leavers dysfunctional to their communities. J. C. Pauvert refers to this as the "cannibalistic" tendencies of education. By

this term he means "the phenomenon that the lower levels of education educate people only for moving on to higher levels of education. Primary education educates the young for secondary education which in turn seems to exist exclusively to prepare pupils for university. This is particularly serious in countries where only a very small proportion of a certain age-group reaches the level of university education. Assuming that in developing countries this percentage is 5-10 percent (and this is a high estimate), this means that 90-95 percent of an age-group will face very large problems upon leaving school because school prepared them not for entering the labour market, but for something they could never attain, namely, secondary or university education" (J. C. Pauvert, 1988).

Cannibalistic is perhaps a strong word. However, implied is the "inhuman cruelty" of giving young people false hopes, coupled with the injustice of not adequately preparing them for the world of work - the world for 90-95 per cent of young people in many countries in the region.

Equity remains elusive in many countries for as one Indian educator says "Education by itself cannot bring about equality in an unequal society or justice in an unjust social order" (Adiseshiah, India, 1985). S. C. Dube (1986) stressed that education is a valuable adjunct to social action, not its substitute. By and large, there is a predominance of inequality in the region - in health, income, privileges and rights. Except in a few countries, a few virtually wallow in wealth, while the vast majority live amidst sheer poverty, deprivation and squalor. The few wealthy ones receive much higher income that makes them even richer and by and large oblivious to the plight of the poor. Most of the nations' leaders in Government, business, industry and agriculture are from the well-to-do social class. Not having actually experienced how it feels to be deprived, they cannot care less about the plight of the masses of the poor. To a certain extent this supports the Neo-Marxist theory which states that inequalities in education are based on economic class differences, and that education is used by the "ruling class" to reproduce the capitalist mode of production and exploitation.

Undeniably for many of the poor, education gives them hope for upward social mobility. Education gives them hope to free themselves from the shackles of dire poverty. As two Korean educators assert, education is an instrument for social mobility and success. Their study revealed that the correlation between occupational variable and the variable of education is O.89 and the correlation between income level and that of education 0.78 (see Jae Lee and Keiko Sakura 1987). Assuming that this is true in many countries, the question is then how to afford quality education for one and all, including the poorest of the poor.

Indeed, in theory the young have the right to compete in school, and those who excel could earn a rightful place in a university. University graduates could get better jobs and thus ameliorate themselves from the hopelessness to which they happen to be born into. But for most of the children of the poor, that is fairy tale, and by and large an impossible dream. The children of the poor are disadvantaged from the outset. For while the children of the rich are provided all sorts of learning picture stories, atari games, lego, etc. the children of the poor have virtually nothing. In many countries, the children of the well-to-do are taught how to read as early as three years old, and are placed in nursery and kindergarten at age four and five respectively. The children of the poor have no opportunity at all for formal pre-school education and by and large the parents are too impoverished to care for the children's mental development, as clearly the priority is how to stay alive. So while in theory there is equality in competing for primary, secondary and higher education, in reality the children of the well-to-do are undeniably favoured, by virtue of all sorts of wholesome hidden curriculum to which they have been continually exposed.

Some studies in Australia have shown a strong correlation between participation in higher education and socio-economic status. The stereotype of a university student in Australia is someone from a privileged background who is immune to economic down-turns (Bragget, 1984). The composition of the student in universities, drawn largely from the

higher socio-economic status groups, has been very stable over the years (Anderson and Vervoorn, 1983). This is true in many countries of the region.

A Malaysian study revealed that rural and remote schools do not provide for social mobility in that in small pockets of communities throughout the country, schooling is a dead end. Plantation schools, for instance, show the low quality schooling perpetuates the inequality of that social system and leads to dead ends (S. H. Ali, et al, 1987).

A group of Australian educators think such privileges for a choice few are in conflict with democratic ideals and social practice as they promote the creation of social mechanisms which tend to increase the power of those already powerful and to exclude even more rigidly those who already suffer disadvantage and alienation (Michael Middleton, et al, 1986).

In a few countries, a more realistic conception of equality for the future is envisioned. As one Filipino educator states, "We have to avoid the mistake of pursuing the myth of absolute equality. There must be an intellectual contingent who can serve the people with their minds. Equality lies not in abolishing the intelligentsia, but in equalizing access to membership in that group.

Education and National Unity

In planning for the future, the quest for national unity remains very much on the agenda, despite the fact that most countries in the region obtained independence after World War II. In many countries there appear to be constant threats to national unity, largely due to various forces dragging them towards divisiveness. For instance, the existence of many different languages and their underlying socio-cultural context has been a potent divisive factor. In Australia, it is estimated that at any one time, the following languages are spoken regularly, each by at least 45.000 Australians - Arabic, Dutch, French, German, Greek, Italian, Polish, Spanish, Chinese and Indo-Chinese. There are also the aboriginal languages. Each of these languages has its own cultural mooring that tends to make people different and to gravitate towards disunity. In Australia, future actions are therefore eagerly awaited in the interest of the nation's social integration (Hughes, Corson, Caldwell, 1985).

In Malaysia, education is envisioned to serve two important functions, namely (i) as a means to achieve national unity; and (ii) as a vehicle for national development. Since 1964, English has slowly been replaced by Bahasa Malaysia, the argument being that a national system of education using a common medium of instruction, in addition to a common syllabus, will provide strong bases for promoting national unity. But unfortunately the same policy has created inter-ethnic tension, in view of the fact that in Malaysia about 53 per cent are Malays, 35 per cent Chinese and about 11 per cent of Indian origin (S. Husin Ali, Chang Yii Tan, Tan Boon Kean, 1987). The urge to use Chinese and Hindi languages remains quite strong.

In India, a three-language formula has been adopted, i.e. one's regional language, Hindi and English. However, elite "public" residential schools, and day-public schools in the cities continue to use English. These schools cater to those who could pay exorbitant school fees. It was noted that the Indian labour market, usually consisting of professional, technical and qualified persons in organized central government or large organizations/cooperation is drawing heavily upon well-education, public school, English medium students (Rais Ahmed, B. Prakash, B. K. R. Burman). The three language policy tends to stratify Indian society into those speaking the regional language, Hindi and English, with the first two ascribed lower status in society vis-à-vis those who were education in English.

In the Philippines, a bilingual medium of instruction has been the policy. Subjects like science and mathematics are to be taught in English, whereas social studies and vocational courses are to be taught in Filipino - the national language. However, in high standard, sectarian (Catholic) and high-fee charging schools, English is mainly used, except for the language subject - Filipino. Entrance examinations to high standard universities are

also predominantly in the English language. Likewise expertise in communication skills in English is a crucial criterion for choices and high-paying professional jobs. Hence, youngsters who go through the public schools (government schools) where a bilingual medium is used are at a great disadvantage vis-à-vis those educated in mainly English medium schools. By and large, those who go to the public schools are children of the poor who invariably cannot pay the costly fees charged by high standard sectarian private schools, and by the nature of their substandard education, their obsession for upward mobility is invariably nipped in the bud.

In some countries, scholarships are made available, especially for deserving university students. However, a study done at the University in Malaya showed that most scholarships were given to people who could well afford to sponsor their own university education (S. H. Ali, et al, 1987).

In Sri Lanka, it may be recalled that during the colonial rule, two parallel education systems emerged - one English medium fee levying; another Sinhala or Tamil medium free of cost. The outputs of these two systems constituted two different kinds of students and they had access to two different sections of Sri Lanka society. English medium students had access to all professional, technical civil service job opportunities while Sinhala and Tamil medium students were left out of the entire organized sector. That dual system of education exacerbated stratification of Sri Lanka society. To obviate the problem Sinhala was adopted as a national language, which diminished emphasis on English. But, then the tension between the Sinhala and Tamil, the prominent minority, surfaced and continues to be a serious problem in the country (Rais Ahmed, B. Prakash, B. K. R. Burma, 1987).

Education that creates divisiveness and social stratification in a nation is likely to be conducive towards a pessimistic scenario for the future.

Transmission or Creation of Culture

With regard to culture, there are two distinct functions of education i.e. the transmission and creation of culture.

The extent of emphasis of one versus the other may in fact determine the kind of education for the future that a country would have. Stress on transmission of culture at the expense of creation of new culture may indeed mean preservation of cherished material and non-material culture, customs and traditions. This process has its own advantage, inter alia, less generation gap, and less violent waves to de-establish society. However, such may not be conducive to accelerated development and progress.

On the other hand, to stress creation of a new culture especially to keep up with scientific and technological advances may indeed usher in development and progress, especially with reference to material culture, but may also mean the erosion of cherished socio-cultural values.

Regarding this dilemma, Hiroshi Kida points out a possible solution. He says, "Basically education is to transmit the existing culture, that is, education is an undertaking to transfer the product of one society to the next generation. Education is supported and influenced by the cultural and social environments that were produced by human beings in the past. It could be said that the educational reforms in the past were successful because of the attainments of previous generations. The new generation thus educated becomes the initiator of the social development to build a new culture for the society. The next generation will be affected by that culture and grow. This will be the matured relationship between education and society". (Kida, 1986).

Education and Economic Progress

Malcolm Adiseshiah says that "Economists have long regarded education as an instrument for the economic progress of society. A good deal of literature exists on the contribution of education to economic development which specifies the nature of the contribution, the means of measuring the contribution, and the balancing of educational costs against benefits.

To start with, the contribution of education to the economy was seen to be through its function of training middle and high-level manpower for running the government, peopling parliament, and operating agriculture, manufacturing industries, mines and trade of the country" (Malcolm Adiseshiah, 1985).

Some scholars think that the extent to which education could contribute to economic progress would depend on the extent to which education and training of the young could anticipate and meet the manpower needs of the future.

China's vision of education in the year 2000 includes, inter alia, strengthening of vocational and technical education geared to manpower needs of the twenty-first century (Lao Zhao Hong and Shi Min, 1987). Teacher training institutions are therefore called upon to emphasize vocational and technical education (Tian Jiasheng, 1987).

A group of scholars in Malaysia observed that "There has been so much consolidation of the educational system, and attempts to produce the much needed manpower based on present needs that not enough attention has been paid to education and training that will develop the individuals to cope with the future, which is characterized by constant change" (R. H. Ahmad, T. Marimutha and N. Ismail, 1987).

It is precisely to remedy such situations that some countries have geared educational programmes, especially vocational and technical education, towards the development of manpower skills that are likely to be required for the future. Some thinkers, however, cautioned that it is impossible to foresee accurately the requirements for specific skills .... two or three years hence (Arun Bose, 1987).

Rather than narrow vocational specialization, a group of Malaysian scholars think that the education system of the future should be geared towards equipping the pupils with the right kind of attitudes, skills and training to enable them to be adaptable and knowledgeable. They should be able to cope with changes in the working world and skilled in the use of new technologies (R. H. Ahmad, T. Marimutha, N. Ismail, 1987).

The study of Ahmad et al, entitled Interface of Education with Employment and Leisure in the Context of Alternative Futures in Malaysia showed three possible scenarios - optimistic, pessimistic and most probable. The optimistic scenario includes greater flexibility in the use of knowledge and skills acquired through education. Education would prepare an individual to be ready to take employment for which he was trained and the ability to develop further skills in the job. The pessimistic scenario would mean education would be mainly a credential chasing process, with very little regard to the development of the person's potential, or his suitability for the employment marked with the proper range of skills required for the job. In this Malaysian study, the most probable scenario borders somewhat upon the pessimistic (R. H. Ahmad, T. Marimutha and N. Ismail, 1987).

Education for All

In planning for the future of education, most countries of the region include a clearer vision of "education for all by the year 2000". As conceived in the 1985 Fifth Regional Conference of Ministers of Education and Those Responsible for Economic Planning in Asia and the Pacific (MINEDAP V), the Asia-Pacific Programme of Education for All (APPEAL)

will ensure that through a three-pronged approach, namely, universalization of primary education (UPE), eradication of illiteracy (EOI) and continuing education.

Universalization of primary education is accorded high priority, with the activities focused on three main elements, namely (i) extension of educational opportunities for all children, with special emphasis on girls' education as well as educational opportunities for the deprived and disadvantaged population groups; (ii) retention of children in learning situations so that they are able to achieve the essential learning gains; and (iii) raising the efficiency of the system as a learning system (Raja Roy Singh, 1986).

In the region as a whole, the number of illiterates (15 years and above) had increased from 636 million in 1970 to 666 million in 1986. About 60 million primary school aged children were not enrolled in schools and about 33 million children dropped out of primary school before completing grade V. As a result, by 1985 the number of out-of-school children and youth aged 6-23 years had also increased to about 355 million.

An analysis of the present educational situation reveals that most of the illiterates and those out-of-school are girls and women and the disadvantaged (Unesco PROAP APPEAL, Brochure, 1987).

Innovative literacy programmes have been planned and are being implemented in many countries of the region especially those which have still relatively higher illiteracy rates.

It is now universally agreed that literacy and basic education are a sine-qua-non for human resource development. Several studies and experiences have shown that illiteracy is invariably associated with poverty, deprivation, malnutrition, higher mortality rate, increased population growth rate and with all forms of underdevelopment.

Realizing the implication of these facts for socio-economic and cultural development, all the countries in Asia and the Pacific have adopted policies and programmes to universalize primary education, to eradicate literacy and to provide continuing education (Unesco PROAP APPEAL, Brochure, 1987).

Continuing education includes among others, parental education, improved linkages between formal and non-formal education and continuing education and its application to work. Continuing education is referred to by some scholars as lifelong education. As early as 1975, Malcolm S. Adiseshiah anticipated that education in 2001 shall take the shape of lifelong education..."that education is not the spatial monopoly of something called the school and college, that it is not a time-bound learning experience, that there is no such thing as childhood education, adolescent education, youth education, adult education, that pedagogy and androgogy are just misleading time-distorting educational bureaucratese. There is just education which is a way of life, a lifelong way of life. Every year, every month, every day, from the cradle to the grave, a person will be learning, open to learning and given the opportunity to learn in the home, school, university, factory, farm, hospital, office, cooperative, temple, trade union, political party, cinema and club". (Adiseshiah, 1975).

Summary Statement

The scholarly ideas of more than 30 scholars and/or prominent educators have been used in the analysis of basic components of sound planning for the future of education. Most of these grand visions were conceived, largely in the context of their own countries. Most of those who painted probable pessimistic scenarios did so only as a preventive stance. In the words of Rod A. Wickstrom "A forecast is created that is so disastrous or undesirable, then an intervention is made to render it false". On the other hand, some educators and scholars envisioned optimistic scenarios trusting on the creativeness and inventiveness inherent in the human mind. Many are, however, more pragmatic bearing in mind resource constraints, and thus envision most probable scenarios for education.

It is to be noted that many countries in the region are already actively involved in resolving the issues/dilemmas cited in this paper. Their success will hopefully contribute towards the realization of one of the objectives of the Third Medium-Term Plan of Unesco (1990-1995), i.e. improving the quality and relevance of education and adapting educational content and methods to the requirements of societies in the twenty-first century.

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Today's world is one of contrasts, particularly when looking at the widening gap between the rich and the poor. On the one hand, the affluent societies of North America, Japan, Australia and Western Europe; on the other, the many poor countries of the South.

The rich countries have witnessed a period of extraordinary economic development over the last forty years. The production of goods and services has doubled five times. The consumption of energy and raw materials has more than quadrupled.

The positive effects on society of this rapid growth are obvious. The overwhelming majority of the population in the rich countries enjoy a high standard of living, including social benefits and social security systems which give protection in case of illness, unemployment, etc. However, an increasing number of citizens of these countries question whether the very policies on which development has so far been based are the right ones for the future. Our generation is the first to be faced with a decision that will determine whether the Earth our children inherit will be habitable (Brown et al., 1989). The life support systems and nonrenewable resources on Earth are being decimated by a burgeoning population which possesses the power of science and technology. In such a situation it is of the utmost importance that educational goals and objectives are imbued with an environmental ethic.

Ecology - An example of a Subject for the Future

How should the curriculum be structured and teaching be organized, so as to give insights into the ecological and environmental impact of technology in modern society and instill in young people a feeling of global responsibility? This paper will give examples of how to incorporate environmental concerns into basic courses to achieve not only an awareness of the impact of science and technology, but also motivation on the part of young people to participate in revitalizing the Earth's environment. Introduction of the environmental dimension could make education more relevant and interesting. Our task as educators is to clarify the role played by science and technology in disrupting the Earth's ability to sustain life; on the other hand, students must be motivated to use their knowledge, including science and technology, to restore the Earth's environment.

Modern technology has given humanity unheard of power to manipulate earth, air, fire and water. With modern bulldozers and power shovels masses of the Earth's surface the size of an Egyptian pyramid can be moved in weeks, instead of years. The effluents of factories can raise the temperature of rivers to dangerous levels. We can darken the sky with atmospheric pollution, produce temperatures that match those of the sun and destroy a modern city in minutes.

Such power has enabled modern man to accelerate all trends towards environmental deterioration. Even if it is acknowledged that technology has yielded benefits and conveniences, we are overwhelmed by its destructive consequences which are now often out of control and call for action. The aim of the technologist is to produce things that satisfy human wants. The negative aspects of technology stem from one of its objectives which is to control the materials and the forces of nature through procedures and devices designed to satisfy human needs. The need to "*mend the earth*" could, to a large extent, be satisfied if we applied the methodology of technology to it. The technologist tackles problems brought to him by his clients. He builds bridges, skyscrapers, or Earth satellites for a fee. The future

technologist must be instructed to generate a blueprint for "*mending the Earth*" (Baez et al., 1987).

The concepts of ecology and environment are closely linked. Ecology is the branch of science concerned with how organisms are interrelated with one another and with the environment. The main tenet of ecology is that all things are interrelated. The scope of ecology goes far beyond that of biology alone. It considers all the factors that make life possible on our planet. It must also consider disciplines such as economics and the social and behavioural sciences which deal with the motivation of people to utilize natural resources. The reason ecology is so important at this particular time is that humanity is entering a critical era in which the knowledge that comes from physics, chemistry and biology is not sufficient to cope with the problems of human survival. It must be supplemented by and integrated with knowledge from the other sciences and disciplines. All knowledge must be integrated and treated in the holistic way characteristic of ecology.

The ordinary teacher is often guided by the textbooks available. The textbook writer, therefore, plays an important role and the best are those with a strong scientific background. It is important for the future that textbook writers give high priority to environmental improvement. All countries have to cooperate in stopping ecological devastation which knows no political or geographical boundaries.

The methods used in future schools will probably not differ very much from earlier methods. However, consistency in what is taught and how the school environment is organized is important. Philosophers of education have always told us not only how important it is that the student enjoys learning, but also how important it is for a student to be creative. Students must also be trained to think by themselves and not only to do what they have been told to do.

Life, Rights and Ethics

The concept of rights has entered the environmental arena from the point of view of philosophical, religious and scientific considerations. The principles of ecology as well as religious ideas are forcing people in modern societies to realize that plants and animals also have a right to exist. Ethics deals with right and wrong. It is my point of view that activities that tend to destroy or diminish life are wrong and those which enhance life are right. A base for an environmental ethic is respect and affection for living things.

It is obvious that a nuclear holocaust would have a devastating effect on the world's environment. Even preparation for war is destroying our environment. Peace has a benign effect on the environment, whereas war and preparation for war has destructive effects. Respect for the rights of others including plants, animals and the Earth itself is a good environmental ethic.

Courses in environmental ethics can be taught in universities, but they alone cannot produce the widespread diffusion of an environmental ethic which is needed to "*mend the Earth*". Formal education is good at transmitting information but no so good at generating attitudes. There is an important body of knowledge in the sciences upon which the right ecological decisions must be made and this can be the subject of lectures, books and other publications. But, changes in attitudes toward the Earth will probably come about in more subtle ways. During a field trip a teacher can make remarks and take action which illustrate a love and respect for nature which the student may absorb.

Scientific Literacy and the Future Labour Force

Human resources are rapidly becoming the most important economic asset of modern industrial societies, dwarfing such factors as natural resources, climate, geographical location, or accumulated capital stock. As economies become more knowledge-based this can only increase in the future. In many countries today there is debate on what really constitutes

scientific literacy and how much technical exposure is really essential for a capable work force. New generations of production technology succeed each other so rapidly that skills learned primarily on-the-job very soon become obsolete.

In many countries, the robot and the computer have taken over many jobs in manufacturing. An important effect of computerization in Sweden is the democratization of the work place. When this happens in the production process, workers tend to perform more varied tasks and need knowledge in order to solve problems and take decisions on their own. In their communication with the machine, which might be occasional, they do not always have to ask somebody. To be able to take their own decisions they must not only have a much deeper scientific knowledge than before, but also be able to cooperate democratically in their own environment.

In most modern industries, groups have to take their own decisions as there is nobody to ask or consult. In Swedish industries today, companies are spending high percentages of their profits on training. Very soon, industry will be spending as much money on scientific upgrading and democratic schooling as the State invests in the overall elementary, secondary and higher education system. This is a trend not only in Sweden, but also in many industrialized countries. Human resource development seems to be the best way to compete in an increasingly competitive world market. This is a popular philosophy in Europe today with preparations for the Common Market of 1992.

In the United States, there have been attempts to build up the elements of scientific literacy. Projects have tried to address the question "*what understandings and habits of mind are essential for all citizens in a scientifically literate society*". It was a fundamental premise of this group that "*the schools do not need to be asked to teach more and more, but to teach less so that it can be taught better*". The groups have attempted to define a common core of learning limited to the ideas and skills having the greatest scientific and educational significance. Analyses showed that the elements of scientific literacy were placed in four categories: The Scientific Endeavour, Scientific Views of the World, Perspectives on Science, and Scientific Habits of Mind.

In many countries the education system is based on a model of the work place which is rapidly becoming obsolete. We are moving away from the era of "*scientific management*" in which brain work and manual or operator work are rigidly separated. Industrial organization is evolving towards a situation in which decisions critical to the future of the firm or the organization will be - of necessity - delegated to lower and lower levels of the organization. This form of work organization demands a much higher level of interpersonal skills than in the past. When machines increasingly take over manual jobs, the functions of all workers will become more like those of traditional managers, except they will be managing, programming, checking and coordinating the operation of computerized machines.

The organization and management of public education is in most countries based on the model of the factory developed as an outgrowth of the scientific management movement of the early 20th century. The theory was that if there was a science of industrial production, there was also a science of education and it could be organized in the same manner. The teacher would be the worker manning the production line. The student would be the product. The principal would be the foreman, and the superintendent the director.

There is a certain irony in the fact that the social organization of a system designed to produce citizens for the 21st century is designed according to a management model for the organization of work derived from the late 19th century. This must be a poor social environment in which to learn how to live in the world in which most of the students will have to function. The new modes of organization of work which are rapidly spreading make more demands on the independence and self-motivation of the workers (Brooks & MacCoby, 1988). It seems doubtful whether any reform of curriculum content by itself will be of much help in improving the output of the schools without a fundamental change in the social environment in which learning takes place.

Evaluation

Many countries today carry out national programmes of evaluation. Their purpose is usually to enhance the knowledge provided by schools and adult education and to compile input documentation for decision-making. National evaluation results could also supply information concerning the state of the school system and form a basis for analyses and debate concerning schools, their activities and results. Assessment of productivity and efficiency can also be essential parts of a national evaluation.

Over and above national evaluation, many countries want to participate in comparative evaluation studies. International comparisons very often open up discussions on standards in national schools. Evaluation studies, both national and international, are here to stay; however, methods have to be developed to make them easy and cheap to perform. Very often, such studies take a long time to conduct, and tend to be very expensive (Fägerlind, 1989).

Another type of evaluation which is quite useful is the longitudinal study where the same individuals are followed for a long period of time. In Sweden we have several generations of longitudinal studies where results can be compared between generations of students. Such studies provide unique opportunities for investigating connections between socio-economic backgrounds, ability tests, standardized achievement tests, course choices and marks, and the continuation or discontinuation in upper secondary and tertiary studies. They also provide good opportunities to study the relationship between background factors, working life, job changes and earned income. Longitudinal studies make it possible for us to understand much better the role that education plays in society.

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Some Recommendations and Directions

The problem of the quality of education in the context of the 21st century is a challenge: How do we address social injustice, develop human potential and provide a high quality of life and happiness for all without lowering academic standards.

Any one of several possible scenarios for the 21st century will certainly make demands on the quality of education. It will require our massive and total effort to review, study, plan and implement programmes in all aspects of educational concerns.

At all levels of educational planning, leadership and enterprise, quality is in a sense a function of education. The larger the group of college trained persons, the greater the possibility of developing an adequate pool of competent workers, professional managers, educators and teachers at all levels.

Quality education is expensive and quality education equated with elitism is admittedly not democratic. However, schools and universities must maintain standards appropriate to what is, in effect, an elite intellectual community.

This contradiction has to be resolved. While schools and universities must of necessity be elitist in method, they must eliminate elitist aims and principles and serve instead as a centre for the unfolding of democratic values.

The following educational points of emphasis have been suggested for consideration in thinking about improving the quality of education in the 21st century:

- Basic Education (the three Rs) For All - that puts the fundamental humanistic interests above any particular class, party, nation or ideology - which all schools must consciously serve. Subjects should include understanding of the causes and the elimination of poverty, ignorance, exploitation, ill health, over population, unhealthy environment, unemployment, malnutrition, and fostering cooperation and social concerns of all its members. These interests embody enduring values for the quality of life. Education should aim to understand man and his environment, it should look into functional literacy, self government, economic self-sufficiency and self-reliance as well as social and moral stability.

- Scientific Education - the intellectual rigours of scientific enquiry. Mathematical logic and main technology methods. Development of the human being and society through the use of science.

- Skills, Vocational/Career Choices, Professional Expertise. These will provide the necessary support for the country's scientific and technological advances.

- Aesthetics/The Arts - The education of the spirit; the enhancement of man's aesthetic sense, and the transmission and transformation of a rich cultural heritage and aesthetic values.

There are also certain aspects of life and the environment that demand consideration as educators plan the future of education. These are discussed briefly in the following paragraphs.

Longer life span

More specifically, education in the near future needs to consider provisions for non-formal/informal ways of meeting the educational needs of both youth and the elderly in all of the above aspects. With better health, developments in modern medicine and a longer life span, there will be a larger number of older people who will need further education. A person of working age in the 21st century may well expect to take up a second or even third career during his life span. What kind of training programmes/systems are needed for the near future? The kinds of skills needed and the manner of delivery will be very varied to meet the needs of increasingly larger groups of adults who will wish to upgrade existing skills or learn new ones.

Depletion of Resources and Demands on the Environment

The rate of depletion of a resource should not be such that the resource is beyond recovery. For example, land is a critical resource and its use must be carefully husbanded so that it can continue to be used for sustained development. The rate of depletion of other resources like minerals and fossil fuels should be such that these resources do not run out before acceptable substitutes are found. Another crucial resource is the diversity of plants and animals. Modern development tends to reduce the diversity of species due to its impact on the environment. The processes that bring about modernity and progress simplify the environment so much that one of the serious consequences of these processes is the reduction in the diversity of plant and animal species.

The loss of plant and animal diversity will greatly limit the eco-systems of the future for there will be less variety of plants and animals able to adapt to adverse changes of climate and environment. When we undertake projects in the name of progress, development and modernization, we must ensure that such developments are sustainable. Sustainable development requires conservation and wise use of resources; it requires that adverse impacts on the quality of air, land and water are minimized to maintain the overall integrity of the ecosystem. We forget most of the time that the planet earth is a living, breathing organism; it needs care like any other living thing and we must take care of it for it is our home, the only one we have, and who else will provide the care it needs?

The linked basic human needs of housing, space, water supply, sanitation, health care and nutrition also make critical demands on the environment. Deficiencies in these areas are clearly signs of environmental stress. Increased population in such areas aggravate the problems. The world is running out of its stock of nonrenewable sources of energy. Even if new sources are found, it is estimated that such new sources could only add another 25 years of available energy for the world at the present rates of consumption.

Experts tell us that our current stock of nonrenewable energy would last only 25 years at the most, based on the early years of the 1980s(1). Since we are now on the threshold of the 1990s we should have used about 10 years of that 25 year period.

In third world countries by the start of the 21st century it is estimated that 3 billion people will be living in areas where wood is being cut faster than it grows(2). We may have the technology to use other sources of available energy but can they be made available to us at the same rate as we now use the current available sources of energy? What problems need to be solved before these other sources of energy can be utilized by all.

(1) Rifkin, Jeremy and Howard, Ted, Entropy: A New World View. New York: Bantam Books, Inc. 1981.

(2) World Commission on Environment and Development. Our Common Future. New York: Oxford University Press. 1987.

Efficiency in the use of energy will be necessary but not sufficient to ensure available energy for the 21st century and onwards. Habits in the use of energy will have to change, adopting low energy pathways, i.e. using renewable resources should become the foundation of world energy use. People will need to use less energy and to use it more efficiently so there is less waste.

Economic and Technological Growth

In western societies economic growth is linked with technological growth. Every problem is considered as having a technological solution; these seem to be the accepted reactions in both the modern segment of the world as well as in the parts considered as developing or underdeveloped. Technological growth is perceived not only as the problem solver but also as determining our life styles, our social organizations and our values, rather than recognizing that it should be the contrary, and that our values and social relations should determine the nature of our technology.

In our efforts to keep up with technological developments in the world, we constantly attempt to upgrade the vocational offerings in our schools. But there is such a vast array of competencies for which students could be trained that most schools would not by themselves be able to offer such training. Hence, closer cooperation between school and industry becomes necessary. It seems that for a developing country like the Philippines, small, light industries dispersed throughout the countryside closely cooperating with the school would be ideal - bringing a closer relationship between the world of work and the school than is presently the case in many of our cities.

The School and the Community

On current developments in the collaboration between school and out-of-school settings the NSSE has this to say:

"In this century we have been moving from a school-based system of education to a community-based system of education. In the former, education took place entirely within the school; in the latter, the school became one of a network of educational learning centers in the community."(3)

As society becomes more complex it is hard to envisage a citizen that can cope with the complexities of life in the 21st century without a high degree of awareness, insight, problem solving skills and other characteristics which will enable them to face a future of change and innovations. But the school alone cannot be charged with such responsibility. All educational agencies in the environment need to come together to agree on what each can do best in educating youth. What could be envisaged for the future is a network of agencies responsible for educating the young.

Teachers' Opinion

Very recently, this writer fielded a questionnaire to a sample of teacher educators, administrators and secondary teachers in Metro Manila to determine how they perceive the role of conventional social institutions as educators of youth. As a group the respondents rated the following institutions in a decreasing order of importance as educational agencies: the school, the family, media, the workplace, peer groups, religious institutions, youth-serving agencies, professional organizations, museums and exhibits. It is not surprising that

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(3) Education in School and Non-School Settings. Eighty-fourth Yearbook of the National Society on the Study of Education. Edited by Mario D. Fantini and Robert L. Sindenir. NSSE 1988, Chicago. University of Chicago Press. p. 62.

the institutions that scored lowest are those that local experience indicate are least accessible to a large majority of the school-aged population, at least in third world countries.

CONCLUSION

With the foregoing possible scenarios in mind, it is appropriate at this point to mention the qualities of education today that could help prepare youth for the 21st century. These are stated in terms of possible directions that education may take:

- developing problem-solving skills, creativity;
- developing awareness of changes in the physical, social environment and increasing the capacities to meet these changes;
- encouraging participation of girls/women in education, careers and jobs;
- closer interaction between school and community/place of work, involvement in problems of the community that affect the school/learner;
- sharing the educational experience and responsibility with various institutions in the community;
- developing a concept of growth that recognizes limits in many areas of human activity;
- developing values and attitudes towards the environment and development geared towards conservation and sustainable development;
- developing the notion of people as guardians or stewards of the earth;
- developing a sense of responsibility for future generations who will inherit the earth from the present generations;
- developing an attitude of efficiency, of getting more out of less (efficient use of resources - plants, animals, minerals, land, water and air).

In brief, current education must develop strong scientific literacy amongst all people coupled with the values and attitudes that commit them to a sense of responsibility for the future generations so that they may inherit a planet that is habitable, that is peopled by human beings who can live in harmony with nature and themselves.

This is the challenge before us. We are all educators, thinkers and critics of our times. These are not mere abstractions but grim realities on which we cannot turn our backs. In this spirit, we course our entire educational efforts to action, involvement and commitment.

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Moral Education faced with the Challenge of the Scientific and Technological Revolution of the 21st Century

Today's society has been penetrated by a new scientific and technological revolution which, by inference, will last until the mid-21st century. Every field of school education confronts the challenge of this revolution, and moral education is no exception.

1. If we are to meet the scientific and technological revolution of the 21st century, we should attach great importance to moral education.

1.1 Re-inforcement of the effect of moral regulation on the scientific and technological revolution.

The scientific and technological revolution with which we are faced will make obvious changes both in the outer and inner structures of science and technology; as a social system, its relationship with the other parts of the social structure and its effect on them are gradually deepening and becoming more complex. Science has not only become dominant in the development of production - and transformed qualitatively the production forces - but more important, modern science has also acquired new qualitative or quantitative social functions. Every important transformation in science and technology will have a strong and rapid influence in every field of human life. Having far outreached the range of the productive forces, it might well span all fields of society. The social active and passive consequences will also be unprecedented. Norbert Wiener said in his work "Cybernetics", that the development of technology would bring with it boundless possibilities both in vice and virtue; it is an objective reality independent of man's will. The external structure of the scientific and technological revolution should strengthen all kinds of regulative and controlling mechanisms in society and make the great power coming from the revolution bring real benefits to mankind, rather than becoming a kind of alien power without control, threatening the existence of human beings and society, infringing upon people's interests and causing the imbalance and dislocation of nature. It is very important to raise the standard of social morality and to strengthen people's social responsibility and sense of morality. Regulation and control of morality are very important parts of the total social regulatory mechanism. People should not only understand the objective law, master it, apply it to changes in nature and make use of nature, but should also observe some moral criteria, make moral judgements. It should be clear for whom and for what science and technology should serve. We should make efforts to apply the achievements of science and technology to serve the interests of human society and be of benefit to the development of that society, and to consider and satisfy people's spiritual and material needs. Moral regulations and control are an important guarantee in ensuring beneficial results from scientific and technological production.

A profound change is also taking place in the internal structure of science and technology. First of all, with the gradual display of the creative nature of science and in the process of developing science and technology, the human factor, not the material factor, is increasingly apparent. The individual who takes part in the work of science and technology, his intellect, his world outlook, his methodology, his devotion to science, his motive for undertaking this work, his standard of professional morality, all constitute the "micro-climate" of scientific and technological activities and directly influence the development of science and technology. It can be proved that the functional efficiency of a scientific and technological system will be different according to the ideological qualities of the individuals involved even when the organizational conditions and systems are the same.

The change in the internal structure of science and technology is also shown when scattered activities of science and technology are integrated into an organic entity. This concentration and integration is an objective process. It is one of the most important characteristics of science and technology. Generally speaking, science is always of a collective character, because science is the result of people's collective work, but the collectivity of modern science and technology is shown as one determining state in time and space. Scientific activities have become a kind of organized union. Today's scientific collective work has become an essential form of scientific activities and only with a collective effort can we make progress. Thus new relationships should be set up between those involved in scientific and technological activities Every scientific and technological worker should regard his activities as part of a whole; he will work with all kinds of specialists in different fields. In this new and complicated inner system of relationships, the functions of morality as a regulation of the relationships between individuals and between individuals and the collectivity will certainly be strengthened. The ideology of the workers, respect for each other's work and a series of other scientific and technological moralities will become necessary to coordinate the progress of scientific and technological activities.

1.2 The dialectical relationship between the development of science and technology and the progress of morality.

There is another reason for strengthening ideological and moral education in order to meet the new scientific and technological revolution, and that is the dialectical relationship between the development of science and technology and the progress of morality.

In the world history of ideology, there were always many different opinions on the relationship between the development of science and technology and the progress of morality. One was that the development of science and technology would certainly lead to the degeneration of morality. Lao-tze and Zhuang-tse in ancient China and Rousseau in 18th century Europe were representatives of this opinion. There appeared a new anti-science school in the powerful current of modern scientific and technological revolution. All the social catastrophes, including moral degeneration, were attributed to the development of science and technology. "Progress of science and technology or of mankind" was the slogan. It was thought that rapid changes in the material and social environment were caused by the development of science and technology. The fact that people had difficulty in adapting to the environment, that stable relationships between people broke down, that passive consumers were rapidly increasing, that the lifespan was longer, that people had lost their confidence in the future, would all lead to a moral crisis.

The opposite opinion considered that the development of science and technology would raise people's standard of morality. In ancient China there was an saying: "People will know courtesy when their barns are full; people will know honour and disgrace when they live a self-sufficient life". Herbart and Helvetids, French philosophers in the 18th century held the same views. Nowadays, the dominating view is to consider the development of science and technology as a panacea which could solve all the problems confronting us. The progress of morality is derivative of the progress of science and technology and there is a synchronized relationship between them.

Marxism is the dialectical unity of material civilization and spiritual civilization and it is the dialectical unity of the development of science and technology and the progress of morality. On the one hand, Marxism admits that the development of science and technology provides a premise for the progress of morality. Morality is a superstructure; its development, the formation of new moral ideas and standards and the general raising of the standard of social morality is always based on the development of material production. The backwardness of science and technology, impoverished material life, and lack of cultural life were also very important reasons for the backwardness of morality. Those who deny the inner relationships between the two are non-materialist. On the other hand, Marxism agrees that there are many medial links between science and technology and morality. Science and technology and the material production forces which come from it will act on the

development of morality through a series of other social factors, first through the social system determined by the relations of production, then through education and all manner of cultural influences. This relation must be admitted by Marxists, otherwise, one will fall into the trap of vulgar materialism.

It should be noted that, with the establishment of the social system, a high standard of material and spiritual civilization emerging from the development of science and technology will certainly be helpful to the development of morality. The development of science and technology will improve people's working and living conditions and increase awareness of the needs of human morality. It will certainly perfect the social structure and reduce, and even eliminate, all kinds of distinction. It will enlarge the realm of people's spiritual lives and provide the necessary conditions for raising the standard of cultural education and knowledge. All of this will be favourable for the development and progress of social morality. The development and progress of science and technology are the necessary "outer" conditions for the overall development of individuals, including their ideological morality, constituting the premise for all-round individual development. Thus, the development of science and technology will also promote a high standard of morality and an all-round development.

The development of science and technology may have a direct influence on those who take part in scientific and technological activities by forming certain traits such as a sense of organizational discipline, a spirit of devotion to science, a scientific mode of thinking etc. However, on the whole, even under the socialist system, there cannot be a simple, synchronized relationship between the development of science and technology and the progress of morality. The relationship will emerge through other social factors, especially all kinds of educational and cultural establishments and the effect on public opinion.

Therefore, on the one hand, we should not adopt an indifferent attitude to or feel pessimistic about social morality and moral education because of the new problems and contradictions which may emerge in the scientific and technological revolution; on the other hand, we should not assume that the development of science and technology and an increase in material wealth will automatically improve social moral standards.

An "Automatic promotion theory" will also lead to the neglect of moral education.

We should not take a long-term view of the development of only science and technology but should also pay attention to the promotion of the development of ideology and morality through moral education, and unite the quality and quantity of all the different parts of the whole society so that they promote each other and give full play to the total function.

2. The scientific and technological revolution poses new problems in moral education

The scientific and technological revolution not only demanded the strengthening of moral education but also posed a series of new problems in school moral education. The tide of the revolution will wash into every field of society. It will change rapidly all living conditions - quality of work, life style, leisure time, family life - and relationships between people. On this basis new moral standards and values will be continuous.

In recent years, under the influence of the development of science and technology and a series of policies, some changes have taken place in the social life of our country as well as in the moral realm e.g. new ideas, standards, modes of behaviour etc. Many ideas, norms and criteria which have been conventional for a long time, which have been commonly observed, which have been firmly established will be examined again in these changing times. The content of school moral education should follow the changing times. If we stand firm behind the old criteria and regard them as never to be changed, we cannot educate the talented people needed by the new era and we cannot prepare for the scientific and technological revolution in the spiritual field of an ideological moral character.

Moreover, the content of morality will not be accepted by a younger generation who has been affected by the pulse of the times.

Distances have been shortened by the scientific and technological revolution. People from different countries have more frequent contacts. Spiritual civilization, concepts, values, aesthetic standards, ethics etc. spread from one nation or social system to another with unprecedented speed and on an unprecedented scale. In the 21st century moral concepts and ideologies of any nation or society will be developed in the process of assimilation, competition and conflict with gradually infiltrating ideologies from other countries and societies. Therefore any moral education in school should be undertaken with such assimilation, competition and conflict in mind. This is an objective law of ideological development and moral education on the basis of the scientific and technological revolution.

Modern society has complex information resources. School is no longer the unique and main information source for students. With the popularization of common propagation, students will obtain a greater quantity of information from outside school than from within. And in quality, information from outside the school will be varied and novel, both in content and in form, and will have a deeper impact (both active and passive) because of the modernization of communication. Since school cannot seal off students from society, school information will interact with information from outside schools. If we hope that school information will exert the expected influence, social information must be considered as connected to it. This is the new task for modern school education. Information from society cannot be controlled. It may be identical with school information in both quality and intensity, it may be identical in quality and different in intensity or different in both quality and intensity. Whilst school cannot regulate the quality and intensity, it can regulate its own information to ensure that information from both school and society joins forces, is complementary and exerts a new educational effect after interaction. The task of education which serves the future is not only to ask the students to "understand its own books" but also to ask the students to "understand the books provided by society". This is an objective claim which the society of varied information resources makes on education.

3. A thought on the goal of moral education facing the 21st century.

The scientific and technological revolution raises a new claim on the human being's moral spirit and bestows new characteristics on the goal of moral education. Moral education should not only persist in the original goal which is suited to the requirements of the times, but should also pay attention to the following new characteristics:

3.1 Adoption of the scientific moral idea and belief

With the development of science and technology, the functions of science are increased. We should conduct research into any phenomena using science as a tool. The realization of either natural phenomena or social phenomena should be a scientific manifestation. Any value realization should conform to the realization of scientific facts. Any adoption of moral ideas and beliefs should be tested by science. Through scientific research we should think and solve all problems, including the choice and adoption of ideas and beliefs in scientific ways and with scientific attitudes. This is a common characteristic which the new generation should possess. The older generation usually chooses perceptual knowledge through their own experiences and comparison between old and new things as their basis for adopting ideas and beliefs. The new generation's beliefs and ideas should be penetrated by more rational factors. Simple feelings influence the older generation's adoption of ideas and beliefs while science and knowledge should play more important roles in the new generation's ideas and beliefs. And, if the older generation used more value judgement in their conclusions on beliefs and ideas, the new generation depend more upon scientific realization.

The formation of beliefs and ideas will be more effective if we bring scientific functions fully into play and combine the study of science and knowledge with the adoption

of beliefs and ideas of the new generation. Thus, these beliefs and ideas will be scientific and they therefore comprise rich features of the new age.

3.2 Dialectical Mode of Thinking

The development of productive forces and science gradually reveals the transformation of motional styles of varied materials and it foresees material contacts at different levels. The wide ranging contact and the ever developing variety of the objective world are increasingly exposed. The full exposure of objective dialectics must (and should) strengthen dialectics of people's subjective world as well as the views of development, unity and systems etc. In a modern world people should correctly understand the objective world which is developing with unprecedented speed and realize that nothing in the world is eternal, whereby they can adopt the ideas of change and innovation and that knowledge cannote be treated as an eternal truth or regular belief. While the law of scientific development exposed by modern science reveals that science is normally gathered little by little, people should try to implement the scientific revolution by breaking old standards and setting up new ones. A scientific revolution requires people to abandon those methods which stick to conventions and rules, and pursue dialectically independent, critical and creative thought as well as what Einstein termed "inner freedom", which means casting off the control of authority and social bias to possess the spirit of free and independent thinking.

We must be aware that a correct philosophical thinking method is a significant spiritual weapon which promotes scientific development. Thomas Kuhn once made a complicated analysis of the internal and external factors which help development science. He paid full attention to the historical conditions of scientific revolution as well as the "subjective factors of a human being". He thought that philosophical and social patterns of world outlook, philosophical trends of thought, customary social demand, value standards and social psychology were spiritual tools of scientific action and as such played important roles as programmes of action and research in scientific activities. Generally speaking, science emerges and develops under the influence of certain world outlooks and methodologies. Scientists usually use rational views to research the objective world and only in this way can science become a highly rational cause with certain goals. Such world outlooks, methodologies and rational views must be materially dialectical. One hundred years ago Engels said "Dialectics is the most important thinking method for today's natural science". This point has been proved by the development of science and it is being further proved by modern science development. We must try to ensure that the new generation grasps such an important thinking method as their own common thinking method.

3.3 Value Concept with Modern Characteristics

I have already mentioned that all kinds of value concepts have changed profoundly due to the great influence of the scientific and technological revolution. Here I would like to stress value understanding of science and knowledge. In this new age of information the functions of science and knowledge are widened. Their functions lie not only with the knowledge and information of nature but have also become an important weapon in understanding and reforming society, undertaking social revolution and liberating spirit and thought. In present day China we are trying to take a leading position in, and to catch up with, world development of scientific and knowledge. This has already become a strategic problem which will decide the rise or fall of our nation, as well as the construction of socialism and the realization of communism.

The social functions of science and knowledge were not obvious in the past because our country lagged behind in science and productive forces. For a long time, people lacked value estimation of science and knowledge. Such trends of thought as despising science and knowledge, narrow empiricism, cultural nihilism, study being useless, and "more knowledge, more reactionary" were fairly widespread. And these false trends seriously hindered the development of science and knowledge. Education in the 21st century should correct all these false value concepts. It should teach the new generation to recognize the great

functions of science and knowledge in modern society, to estimate their action in improving people's material and spirit life, to estimate their revolutionary action in promoting social history. We shall train the new generation in the correct value of science and knowledge, in the moral character of loving science and knowledge and in the revolutionary spirit of devotion to science. We shall strengthen the new generation's concept of respect for mental and intellectual work.

The new scientific and technological revolution requires changes in the approach to problems of time and ouputs. With the acceleration of production each company produces more and more. Time saving and high efficiency thus become criteria for the new value concepts and of moral actions which the new generation must grasp.

3.4 The Open Communication and Code of Conduct

The scientific and technological revolution inevitably forces any closed society to gradually disintegrate and social communication to open. This kind of opening is first apparent in the expansion of social communication. Due to the development of transport and communication, modern society can no longer live in a solitary and closed communication circle. Distance and mobility make it possible to intercommunicate, even for people in different corners of the world. People in modern society are not only subordinated to their first colony but should be subordinated to a series of secondary colonies. They cannot be a member of one family or unit, but must play different roles in joining other groups in politics, in society, in the academic and entertainment world. A person in modern society cannot communicate with other people with a unitary and mechanical code of conduct. He should adjust his own actions in playing different roles when he is in accordance with other people.

Open communication is also shown in the frequency of people's communication in a given time span. Frequent communication implies that one must respect and care for others and abide by common social moralities.

Open communication is also shown in the level of communication. The development of the scientific and technological revolution links the actions of everybody. In scientific production different people together form the organic unity. One person's action must influence many others. Communication changes also in quality. Cooperation, collective principles and a high spirit of collectivism must be the characteristics of the new generation.

To sum up, the new scientific and technological revolution will set a still higher demand on moral education in school. It will bring a set of new contradictions in moral education. New principles will emerge. Therefore, facing the coming 21st century, we must strengthen research in moral education.

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Ideas of China's Educational System in the 21st Century

I. Future Transformation in Macro- and Micro-structures of China's Education

Looking forward to education in the 21st century, closer attention is being paid first of all to renewal of thinking, contents and methods of education, closely related to the training of talented persons. The many-sided and profound transformation of the micro-structure in school education will directly impinge on the quality of personnel and, therefore, constitutes the basis for future education. However, any great renovation in education tends to induce and be accompanied by the renewal and restructuring of the educational system. Owing to the development of socialization, information and internationalization in education and their extension in time and space, education will, in the future, develop into a complicated social system. The tendency of social-educational integration will not only lead to profound changes in the concept, model and structure of education, but will in turn also demand the renewal of its contents and methods. Therefore, future developments in education will be decided on the one hand by giving full play to the various factors in the micro-process of education and on the other, by the rational combination of all sectors, levels and aspects of the macro-educational system. To approach the establishment of the future educational system from the angle of mutual infiltration and mutual promotion between the micro- and macro-aspect of education should be one of the subjects in the study of education facing the 21st century, to which due attention should be paid.

For modern China, the 50 years from the founding of the People's Republic at the end of the 1940s to the end of the century can be regarded as a preparatory stage of socialist modernization. The first half of the next century will be an historic period during which socialist modernization is basically realized. China's education is traversing the same path.

The socialist educational system established following the victory of the people's revolution guaranteed an unprecedented development of the cause in the past 40 years. In 1949 over 80% of Chinese citizens were illiterate or semi-illiterate. Those studying in primary schools only accounted for 20% of school-age children; there were only 205 colleges or universities with a total of 117.000 students. By 1988 nearly 70% of the total counties of the country had made primary education universal and up to 97% of school-age children were studying in schools; there were 1.075 ordinary colleges and universities all over the country with a total of 2.066 million students, which were 4.2 and 16.6 times that of 1949 respectively; about 70% of citizens were no longer illiterate; many achievements in scientific research had reached or exceeded the world's advanced level. The marked successes in the cause of education in new China have demonstrated the superiority of the socialist educational system, and laid a foundation for its development in the 21st century. Now, we are getting nearer and nearer to the threshold of the new century. Faced with the dual tasks of dealing with international competition and realizing modernizations, the current educational system of our country is facing a challenge. How should we restructure China's educational system for the 21st century on the basis of the country's actual conditions with a view to meeting the challenge of future world education? This is a subject put forward to all educators, and is also the main purpose of the author in discussing the problem.

II. China's Education is Facing Dual Challenges in the 21st Century: Scientific and Technological Revolution, Ideological and Cultural Impact

The world-wide scientific and technological revolution started in the 1960s and 1970s will have a profound development in the next century. It is bringing about fundamental changes in the material and spiritual production of mankind, and will, at the same time, give rise to a series of similar changes in the domain of education, i.e. the incessant diversification and synthesizing of sciences and the shortening of the knowledge-renewal periods will inevitably place new demands on the quality of scientists and technicians; the revolutionary changes in production touched off by new technology and the acceleration of the transfer of social careers has placed much higher demands on the flexibility of education; the changes of information communication in time and space will lead to the renewal of the means and organization of education. Under the new technological revolution, knowledge and training have new meanings. The once-and-for-all school education will be developed into a socialized education for life; the communication of science and technology has surpassed national boundaries and promoted intercourse and competition worldwide. Thus, education stands in the fore-front of worldwide competition. Such a global tendency of education development will bring about new subjects for study during the establishment of the country's future system of education. Another angle of the problem is that the worldwide communication of sciences and technology is certainly accompanied by the exchange of ideologies and cultures. Therefore, different social cultures, morals, ethics and values in which science and technology take their roots, are spreading with them. The splendid cultural achievements to be shared by mankind are helpful to the modernization of education. However, thinking and cultures reflecting different social systems, ideologies and national traditions would be a force pounding education. The conflict between socialist and capitalist ideologies will be reflected in education. This will not only affect to a large extent the orientation of values and the social functions of the educational system as a whole, but will also have an effect on the aims and contents of education, i.e. the demand on the quality of persons of ability. How can our educational system produce builders with ability and high socialist consciousness who can creatively absorb and develop the outstanding scientific, technological and cultural achievements of the world on the one hand, and build up the new socialist culture on the other? This is no doubt a new subject for study in the country's educational system which has been relatively domestic-oriented and unitary. Obviously there is no way out if we stick to the old ways and close doors on the world tide of renewal in the fields of science, technology, culture and education. But neither is it good to mechanically copy other countries' models of education, without considering the conditions, social system and our national traditions. What we should struggle for is to create an open, diversified and flexible socialist system of education in keeping with the actual conditions of our country by carrying on good traditions and creating new ones, using other countries' experience, developing what is healthy and discarding what is not.

III. Two Important Factors Restricting the Development of Education: Economy and Population

In answer to the world challenge and marching forward to the future, China's education has first of all to look at its starting point. China is a developing socialist country with a huge population. It has to support a large population receiving education with limited economic power. These are the fundamental conditions restricting the development of education. Indeed, the social system, political elements, cultural traditions, etc. are also important conditions for its development. However, of all these conditions, the economy and population will play a more direct and prominent role in the development of education at present and for a long time to come. Let us take a look at the population first. Even if we limit from now on the birth to each couple of only two or less (which is lower than the present rate), China's total population by the turn of the century will reach 1.280 or 1.300 million, of which, the juvenile (0-14), working-age (15-64) and aged (over 65) population will respectively be 356, 839 and 91 million. These three huge groups of people will make great demands on compulsory education, regular follow-up education, professional training, and old-age education, thus making up an extraordinarily large demand for social education.

In the economic field, however, the turning from mainly extensive management to mainly intensive management, and the readjustment of technological and industrial structures that have brought about a change in the composition of the employed population (the ratio of workers in the first, second and third industries will be changed from 72:16:11 at present to 50:25:25 by 2000), will demand that employees have more years of education on average (the average education of people in 1988 was less than 5 years), especially a higher quality of the working population. What merits attention is that the country's per capita cultivated land is gradually decreasing, which will increasingly produce surplus labourers (there are about 100 million hidden unemployed farm labourers at present). In order to transfer these labourers to other industries, necessary supplementary education or training is needed. Therefore, besides the huge population, economic development itself has placed great pressure on the extension of the educational system. On the other hand, the country's productive forces are quite under-developed. In 1988 the per capita Gross National product was 1.274 yuan (less than US$400), per capita national income 1.070 yuan, per capita revenue 235.3 yuan and the per capita investment in education was 34 yuan, thus seriously restricting the development of education. By the end of this century, the GNP will have quadrupled and the per capita GNP will be about US$800, but the per capita investment on education will still not be enough to meet demands for education from all sectors of the society. China's education is the centre of two contradicting polars: the huge population - demanding an extension of education, but low-level economic development is restricting the extension of education; an economic take-off needs a higher level of education, but the huge population is hindering raising the education level. The basis for designing the 21st century educational system should be to extricate ourselves from this contradiction and to bring the quality of the economy, education and population into a circle.

IV. A Realistic Choice in Designing the 21st Century Educational System: Efficiency or Fairness

From the above rough analyses of the international challenge and domestic conditions facing China's education in the future, one can see that over a fairly long period of time, China's education cannot free itself from certain real contradictions, such as that between the high level education demanded by international competition and the country's social development and the real education level of the country; that between the increasing social demand for education and the limited supply of education; that between raising the education level and universal education; and so forth. To resolve these contradictions, a choice is needed between efficiency and fairness. Under present conditions it is rather difficult to make such a choice. On the one hand, the nature of the country's socialist system demands that we enjoy more equal chances of education and people have a higher standard of education, which tends to emphasize the principle of fairness and great efforts to make education universal, without considering the actual conditions. Consequently, the anxiety to establish a global education for all system is in fact lowering the standard and efficiency of education. On the other hand, as a developing country, China must accelerate its economic development. The up-surge of scientific and technological revolution increases pressure on the economy to catch up with advanced countries. Urgent needs for large numbers of high-level experts tend to stress efficiency and attach importance to higher education and the education of talented persons with a view to meeting urgent social needs, even at the cost of some citizens' rights to education. This is not only in opposition to the aim of socialist education, but may also lead to inequality of educational chances, which may aggravate the imbalance of the structure of society. And this would be a repetition of some developing countries' lessons in neglecting elementary education.

Faced with this dilemma, great developments and readjustment of education have emerged alternately. In higher education, especially, the great rise and fall has been even more obvious. Generally speaking, our country has not seen the excessive expansion of higher education and serious imbalances between higher and elementary education which has occurred in some developing countries. But there has been a certain lopsidedness between popularization and the raising of standards and between fairness and efficiency, mainly due to the fact that we are seeking high speed and over-extension (including structure and form

of education). The crux of the problem lies in the lack of overall quality consciousness so far, which is a balancing point in establishing the education system. Without this balancing point, it is natural that there cannot be perfect efficiency, nor the realization of genuine fairness. Therefore, the equilibrium in restructuring the educational system for the future should be a proper and realistic choice between fairness and efficiency ensuring nevertheless overall quality and correct handling of the relationship between popularization and raising of standards. And, on this formation, we can project the scale, speed, structure, form and distribution of education and restructure the educational system in conformity with the conditions of our country in the 21st century.

V. The Characteristics of China's Educational System in the 21st Century (I): A Fairly Large Scale

The overall education scale constitutes the extension of the educational system. Under the great pressure of the population, economy and social demand, all forms of education at all levels are racing against each other in development. The population in formal education now exceeds 220 million. If all forms of professional training and spare time education are included, the total number is over 300 million. In addition there are 230 million illiterates, of which 70 million are youth and adults. This is an ultra-large group to be educated. An exceedingly heavy burden and imbalance between supply and demand would prevent the educational system from functioning efficiently. Our future educational system must therefore be kept on a fairly large scale, so as to realize the macro-balance between the total supply and demand.

In the next few decades our economy will take off and socialist modernization will be basically realized. This goal of social progress demands a higher degree of universal education. At least 80% of the population should no longer be illiterate, and the new labourers in urban and rural areas should respectively receive 9 and 6 years of education. At the same time, the supply of higher grade experts urgently needed by the country must be guaranteed. This should be the basis for designing fairly large scale education. To be more specific, it is a precondition to guarantee the members of society the right to basic education i.e. compulsory primary school education should be guaranteed first of all for all school-age children between 6 and 11 years old who are capable of receiving education so as to put an end to producing new illiterates; and at the same time, we must gradually make the 9 year compulsory education universal, try to give all employees different periods and forms of professional and technical education, give a small number of young people higher education to meet the most urgent needs of economic, political and cultural development and guarantee the advance of some leading branches of learning. On this foundation, maximum use can be made of existing educational resources to satisfy to the greatest possible degree the demand from all sectors of the society. We are trying to materialize the following formula: fairly large scale education - effectively bring into play the efficiency of this scale of education - social and economic development, the increase of total supply, increased investment in education - even gradually realizing the equal chances to education.

VI. The Characteristics of China's Educational System in the 21st Century (II): An Improved Structure.

By structure, we mean the internal construction of a system. It not only reflects the demand of the changes in the economic and social structures, but is also in keeping with the demand for balanced development of education. The next few decades will be a period for the country to transit from a dual structure society to a modern structure society, i.e. the co-existence of a small modern industrial and urban population with a huge number of traditional agricultural labourers working with hand tools and with the rural population, and dual technical, social and regional structures connected to such a co-existence, will transit to a basically industrialized society with a socialized and modernized commodity production. To match this transition, the country's future improved educational structure will be multi-oriented, more flexible and multi-level, with emphasis on lower level education. In the macro-educational system, we should take 9-year compulsory education as the foundation,

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while strengthening elementary education with a view to raising the labourers' quality, training primary and intermediate persons of ability. At the same time, higher education should be developed on a limited scale so as to meet the need for higher grade experts in building up socialist modernization, and a small number of universities, colleges and branches of learning should catch up with the international advanced level.

In the intermediate structure of education, a coordinated structure for development will be built up both within each branch and between different branches of education. For example, within higher and intermediate education, setting up and ensuring appropriate proportions between basic sciences and applied sciences, between science and engineering and the arts, and between general and specialised courses should be varied at different phases and retain balanced development. Particularly in the intermediate stage of elementary education, an elastic structure should be formed so as to establish a rational proportion between general and professional and technical education at different economic levels and at different phases of development, paying attention to the proper combination of the two kinds of education, thus creating more chances for youngsters to obtain education and jobs.

In the micro-structure of education, a multi-oriented school system and curricula should be experimented. In elementary education schools can flexibly adopt a single track, double track or synthetical system, allowing youngsters to choose their orientation at various stages. In curricula, there should be unified basic requirements while leaving enough room for choice, paying attention to the rational proportion of basic and specialized (professional and technical) courses, major and elective courses, and knowledge and technical ability, and designing a rational knowledge structure for students to develop in various directions.

VII. The Characteristics of China's Educational System in the 21st Century (III): a Variety of Forms

The existing unitary school teaching and regular education in the country can no longer meet demands from society as a whole, nor give full play to the various potential education resources. As future society will attach importance to the quality of employees, there will be ever growing demands for study: intelligence has developed much earlier than before. Therefore the regular school's knowledge structure can no longer meet the needs of development faced with the international information society, and there is a demand for pre-school education and spare time education for youngsters. As progress in the modernization of industry brings about frequent changes in job opportunities and professions in all social spheres, training for employment and transfer of jobs, follow-up and supplementary education will be developed; as the life-education theory arouses more attention and the aged population is growing (there will be 130 million people over 60 years old by 2000), education for the elderly will also grow rapidly. The socialization of future education requires a more balanced development of various forms of schools.

To match this trend towards socialized study, China's educational system in the 21st century should be a great network able to cover the whole society and make the most of various forms of education. The network includes three sub-systems: school education, professional training, social courses for general knowledge (namely the educational functions of libraries, museums, cultural centres, youngster's palaces, science and technology stations and other cultural institutions as well as radio, television, film, literature and art works), and three corresponding forms of education: regular, irregular and informal. Within the network, regular schooling is no doubt the central link which, while being perfected, will provide sites and experience for other forms and systems of education, including opening up schools to society in a more flexible way, such as running all sorts of training courses to meet all the needs of society and making experiments on various school models, offering youngsters and adults more opportunities for study and advanced study in coordination with irregular education within society and informal family education. The increase of various forms of irregular and informal education is not only a necessary supplement to regular education, but also an important way to make full use of human and material resources and make the most of various forms of education. Particularly when the allocation of national income has

changed greatly and the portion in the hands of the government has decreased negatively, we should rely more on all walks of life to develop various forms of spare time education urgently needed by society, including distance education, audiovisual education, correspondence schools, self-teaching, family education and short-term training courses. In fact, the more use made of the educational resources the better, which naturally includes the most possible forms within the network, aiming at satisfying total demand from students at various levels.

VIII. The Characteristics of China's Educational System in the 21st Century (IV): Various Degrees of Ladder-shaped Regional Distribution

Economic and cultural development in various regions of the country are in a ladder-shaped distribution. The country can be divided into the developed, medium-developed and under-developed regions which respectively correspond to the coastal areas in the east, the central areas and the western areas. Within each of the three regions, there are also ladder-shaped districts with different degrees of development. Therefore, in planning the regional distribution of education, we should not only take each region's economic and cultural development as a basis and decide its educational scale, level and system, structure of specialities, forms of organization, and even the speed of development, but at the same time should give full play to the positive role of education in improving the local economy and cultural level to catch up with the developed districts. On this basis, a varied ladder-shaped system should be established, under which the unified requirements for the whole country and localized education balance each other. This ladder-shaped structure will have the following characteristics: the developed region, mainly the coastal areas in eastern China, will take the lead in catching up with the educational level of the medium-developed countries and establish an educational structure that suits the export-oriented economy; the rural areas in the medium-developed region and cities and towns of the whole country will make the 9-year compulsory education universal and set up a relatively complete system of professional and technical education at the beginning of the next century; and in the rural areas of a small number of under-developed regions, primary school education will first be made universal, followed by lower middle school, trying to form a number of educational structures that can be integrated with the local economic and cultural development, including those suitable to the economy and culture of the minority nationalities.

IX. The Characteristics of China's Educational System in the 21st Century (V): An Opening System

Opening up to the outside world and internationalization is one of the marked features of education in the 21st century. In our country, education will increasingly be combined with social life, and the educational system merged with the whole social system. More enterprises and various social organizations are joining hands with schools to run education in cities and the rural areas. These are turning schools into a system more open to society. The open characteristic of future education will not only be seen in the combination of schooling and social practice and in society's participation in education, but also in the close connections between various forms of education. That is to say, informal education may become a form of spreading the most advanced technology at an early stage; regular school education can run various kinds of practical and flexible short-term training courses; and irregular education can also undertake specialized single-subject education with diplomas. In a word, educational organs should exert every possible effort to provide chances for all children, youth, men and women, babies and the elderly and all those who are capable and want to study to realize an educationally integrated society.

There has been rapid development in modern sciences and technology, especially the modernization of the means of message communications and in the mutual exchange and cooperation between educational departments in various countries. It has been an important condition and symbol for a modernized education facing the future to open to the outside world whilst preserving national characteristics. We hold that opening up to the outside world should adopt different ways on the basis of the characteristics of various districts,

levels and forms of education: in the primary and middle schools, we must educate the pupils with patriotism, socialism and global ideas, mould them and broaden their outlook with excellent national traditions and the civilization of mankind, so as to prepare them both in mind and ability for building China and facing the whole world: in professional education, students must have a deep understanding of the country's real conditions and the progress of their profession in the world, increase their concern for the future and competition, be prepared to take part in international exchange, cooperation and competition; especially in colleges, universities and high-level scientific research institutes, a wide-range of international cooperation and exchange in education must be carried out through academic exchanges, cooperation in scientific research, joint schools, exchange of scholars and students, etc. In a word, China's education system facing the 21st century should integrate national with international characteristics, adopt all good points and open up to the outside world.

The establishment of a socialist educational system in keeping with China's situation in the 21st century is a social project that needs long-term study. In this article, we put forward a number of related questions not providing answers. If the questions can start concerted study among colleagues, we would like to carry out extensive cooperation in research.

Professor Dr. Klein, and
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The role of education for the world of tomorrow cannot be generally defined. The special situation existing today in specific regions of the world (developing countries - highly developed countries, or different social systems) has to be taken into account, as have the different development actions which certain regions and states will continue to take at the beginning of the 21st century. There are, however, a number of general trends which are likely to have an impact on all regions and states, hence on all humankind, and which suggest joint demands to be met by education today and over the next ten years, such as:

I. As the world of tomorrow will only exist if war and force are eliminated in international relations, education in all states, whatever the social condition, has to contribute to safeguarding peace. Adolescents must be educated with a view to peaceful co-existence, i.e. with a view to settling political, ideological, religious, moral, national and other differences and conflicts by peaceful means, by discussion and competition.

II. On the eve of the 21st century, the dramatic character of further global problems is about to increase: backwardness in the Third World, protection of the environment and natural resources, human rights and their implementation, etc. These problems can only be solved by joint efforts of all countries, independent of differences existing between them. Peaceful co-existence will therefore be increasingly characterized by cooperation, despite differences existing between social systems, prevailing ideas and values. Peaceful co-existence must, furthermore, result in disarmament, because it will be impossible to solve global problems unless the huge sums spent on armaments are released. On a global scale, education has to raise awareness of these underlying causes and enable the younger generations to take part in such cooperation.

III. In the 21st century, the scientific and technological revolution will engender substantial changes in all branches of employment and in living conditions all over the world. It will be possible to increase labour productivity enormously, protecting resources and the environment, if these aims are given a higher stature than maximum profit. What implications this will have for people in the different regions of the world and for different groups of people inside individual countries will depend on a variety of circumstances, on global strategies, as well as on social strategies in individual countries. We now realize with concern that, in parallel to the scientific and technological revolution, many of the poorest developing countries are becoming poorer and poorer, whilst some highly developed industrialized countries are becoming richer and richer. In most of the highly developed capitalist countries, wealth is concentrated in the hands of a few. Mass unemployment, independent of cyclical fluctuations and its being a permanent attendant symptom of the scientific and technological revolution, has spread in the same way as the new poverty of a not inconsiderable part of the population (2/3 of society). Individual socialist countries, too, are facing many new and difficult problems - individually and as a result of differences in historic development and situations existing today. These countries make every effort to apply the potential inherent in socialism to master the scientific and technological revolution in ways beneficial to the population.

Given existing differences, it becomes apparent that the new quality to be expected of the scientific and technological revolution has far-reaching consequences for education in all regions of the world, although not necessarily the same ones for each.

From all these foreseeable trends of development in the 21st century, the following general conclusions can be drawn for education today and in the near future, conclusions which, to my mind, hold true for all countries, but which, of course, should be adapted to specific conditions.

A. The educational level of the world population must be raised from both a quantitative and qualitative point of view:

In this context, focal points are:

- The elimination of illiteracy.

- The provision of basic general education for all adolescents. Qualitatively, general or basic education has to be determined by all foreseeable development trends in the 21st century and by the respective national (social, cultural, economic) conditions, i.e. by the scientific and technological revolution, and by safeguarding peace and the solution of other global problems.

B. For all education going beyond basic education, economic and other conditions and requirements of the different countries have to be taken into consideration. A very high number of students (in higher education), for example, is good policy only if in the foreseeable future the given country needs it and if the economic performance of these countries allows it. Otherwise, conflicts and disproportions are pre-programmed.

C. Resulting from 40 years of educational and political experience in the German Democratic Republic, I should like to offer four points which, to my mind, are worth mentioning:

- Education should always be oriented ahead of present requirements to a certain, but not too high, degree.

- Education must "head for the future" in the sense that it provides the bases, the abilities and the readiness to go on learning. The educational system should not contain "dead ends", but encourage people to consistently extend acquired education using non-formal methods.

- After basic education (possibly partially together with it) vocational education gains importance for every adolescent.

  A vocational qualification is a pre-condition for the fulfilment of the individual in his or her work situation. It must comprise more than the mere preparation for a specific job. It should be oriented towards basic knowledge and a readiness to meet the changing needs of the future.

- Education has to be accessible to all adolescents at all stages (at higher levels where aptitude exists). There must be no material, racial, religious or other barriers.

I should now like to report on the results of educational, political and pedagogical research work, as well as on trends in pedagogical practice in the GDR, based on the specific reality of this relatively small socialist country, and which therefore are not directly applicable to other countries. On the other hand, they could be of importance to the topic of our symposium, as empirically recorded material.

Since the end of the fifties, the following situation exists in the GDR's educational system:

. About 95% of all children aged 3 to 6 attend state-run kindergartens.

. For all adolescents, a ten-year basic and general secondary school is compulsory, providing a highly homogeneous standard.

. Thereafter - also compulsory - there is vocational education for at least two years, or students attend continuing education leading on to university or college.

. Based on national economic needs and opportunities, the planned number of places at universities and colleges has been kept constant for years, amounting to about 25% of an age-group.

. There is a widely ramified network of forms for lifelong learning and access to universities in later years. There is no dead end in education.

. Education is mainly organized by the state-run educational system, from the kindergarten to the university. At the same time, many social forces also take part in it: parents, enterprises, social organizations, etc.

Although the educational system in the GDR has essentially remained unchanged in its basic structure for 30 years, intense efforts - based on research - have been and are being made in order to keep or make this system quantitatively and qualitatively in line with foreseeable requirements resulting from international developments, (for example, safeguarding peace) and national trends (for example, national economy, social and political developments).

On this basis, necessary changes - mainly qualitative - were made at an early stage and their effects were analyzed.

In this process, amongst others, the following experience was gained:

1. Changes keeping in sight foreseeable development trends have generally only proved efficient if they referred to the educational system as a whole, and were integrated into a social strategy. Measures affecting only individual stages of the educational system, for example, the ten-year school, without corresponding consequences for vocational and higher education did not in general have a major effect.

2. The educational system is a very sensitive organism. Fundamental reform requires careful preparation and should not be carried out too often. It has proved favourable when flexibility and adaptability are part and parcel of the characteristic features of the system in individual states and fields.

3. Over the last 40 years, the period of education and training was considerably extended (in 1946 school attendance of only 8 years was compulsory for all). Today the period is at least 15 years for all (3 years kindergarten + 10 years basic and general secondary school + 2 years vocational education).

   Today, however, we are of the opinion that this period of education and training should be extended a little, for example to the years of study at university (4 to 5 years, 6 years in medicine). Higher demands on education expected in the future too, cannot be met by an extension in time, but by a primarily qualitative change of structure and by education continued as an activity throughout life.

4. What proved to be of special importance for the implementation of equal chances for all adolescents and for the efficiency of the educational system as a whole was the introduction of pre-school education practically accessible for all. Although it remains voluntary, more than 95% take advantage of this opportunity.

In pre-school education, children develop physically and mentally mainly through play, and in this process too, they are systematically prepared for school by a well-trained educational staff. The school entrance standard is higher and more homogeneous than it was 20 years ago.

5. The higher the educational level achieved for all adolescents and the better society guarantees access to this level, the more important becomes the promotion of special gifts and talents bearing in mind foreseeable development trends. Today, modern education, if it hopes to prepare for foreseeable development trends in the 21st century, has to assure in parallel both a relatively high, wide-ranging and essentially identical education for all and the shaping of genuine individuality for everyone. Everybody must obtain a vocational qualification and everybody must have the possibility - generally in relation with vocational training - to develop special interests and special talents.

6. At an early date, and consistently, the GDR was of the opinion that modern general education also has to be characterized by basic knowledge and experience in the fields of technology and economy and by preparation for work, which has proved efficient.

   Since 1959 "polytechnical education" has been an essential, determining element of the 10-year school.

   In practice, this also includes (for short periods of time only) participation of pupils in real life working situations in enterprises. This orientation of general education towards modern technology, successfully practiced for 30 years, provides a good basis for assessing foreseeable trends of the scientific and technological revolution, their consequences for education and for further initiating necessary developments.

   In the eighties, a careful revision of educational content was carried out in the GDR particularly of general and vocational education. The basis was provided by an analysis of results in education and by comprehensive forecasts of future development, comprising, amongst others, the economic and social development of our own country and international relations, particularly with a view to safeguarding peace and solving other global problems, bearing in mind the scientific and technological revolution. For example, new teaching programmes and syllabuses for students were developed. Experience was gained which would be of interest to the topic of our symposium.(1)

7. There is no point in drawing conclusions directly and in an isolated fashion for the educational system or contents of subjects and lessons from individual trends of development in various fields. There were such trends in the GDR and, at present, they also exist internationally. For example, the increasing importance of safeguarding peace has led to demands for the introduction of a subject called "peace education". A similar reason is given for the need for environmental education. A subject of information processing or the computerization of all teaching and learning has been declared to be the logical consequence of the fact that the scientific and technological revolution is essentially influenced by information processing and computers. If this view was shared, the consequence would be a quantitative extension of subject range

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1 Compare: Schneider, G. Scientific and Technological process and School. Pedagogics 44 (1989) Berlin, issue 5. p. 353 and following. The results of this revision of teaching programmes and syllabuses were one of the major topics of the IXth Pedagogical Congress held in Berlin from 13 to 15 June 1989 with 5000 participants.

and educational content. That would not be the ideal solution to our mind. On the contrary, a practical way would be:

Foreseeable trends of development in the various fields----------> effects on the circumstances of life of the people, on the process of work in particular---------> conclusions for the educational concept as a whole---------> conclusions for details.

8. This method lead to the following conclusions: The more dynamic the developments in international security, in environment protection, in the struggle to overcome backwardness, as well as in production and technology, etc., the more important becomes what could, in education, be called basic knowledge and ability. It is not necessarily the most recent details which are decisive for qualified educational preparation to provide all citizens with the ability to enable them to critically and competently contribute to all important issues of society. But, basic knowledge and a high standard of abilities are decisive in education for the independent solution of problems and creative behaviour in general.

9. The more dynamic the development is in the above-mentioned sense, the more important certain features of personality become; characteristics, attitudes and convictions forming the special merits of competent citizens, who are able to judge for themselves and who commit themselves to peace and environmental protection and of qualified and self-confident workers, engineers, scientists etc. Detailed knowledge can be acquired at a later date, whilst character and attitudes are mainly shaped in youth. The extraordinary dynamics of expected developments calls for higher esteem of moral education.

10. Consequences arise from the foreseeable trends of development not only for the aims and content of education, but also for methods of design. Everything promoting creativity, cooperation, independence, responsibility, should be given more esteem in the organization of education. Experience shows, however, that this does not lead to the disappearance of the school as an institution, but rather to increased flexibility and a wider range of subjects inside school. Actual changes in our society have induced intense discussion on many aspects of the GDR's educational system. The new demands expected of the next ten years must be introduced in schools to prepare for entry into the 21st century in an effective way.

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A World Encountering Limits to Quantitative Change: Thoughts on Making 'Quality' Respectable

Taking 'quality' and, even more unusually, 'qualities' as the explicit topic of a serious conference points to a marked change in the perception of concerns which may be legitimately discussed; It indicates a new readiness to seek fruitful contributions from fields that have been virtually taboo-ed.

For a long time, while the world attempted to modernize, one has tried very hard to avoid using such a subjective notion as quality. Among all the imaginable qualities only one may be tendered as currency in public arguments: quantity.

I do not want to obfuscate by asserting that quantity is just one among the qualities. At the same time to ask "How much?" means to be curious about an attribute of something. And this curiosity is essentially the same, whether one asks this or any other "how?" question like "how beautiful?" or "how suitable?". Whether any of these questions can be answered is, of course, yet another question. a "how much?" question apparently can have an unambiguous answer. This is the criterion that has given quantity the status of a trustworthy quality superior to and representative of all the others. Those others are imputed to suffer from the fickleness of subjective judgement.

If this assessment is changing now, then one must suspect that something profound is shifting in our relation to the world. And education, basically an undertaking leading a person towards bringing order to his or her relations within the world, would in consequence be affected profoundly as well.

I do not think that we ourselves are in the process of changing profoundly. We still remain the species that is known by the rather challenging name of "homo sapiens". But due to our successes as "homo faber", we are forced now to search for a different arrangement with and within the limits of our surroundings, which are not only societal - and thus manmade - constructions but also the natural world from which we draw support for life and survival.

In summary, questions about qualities wished for education to serve us in the - presumably - changed world of the next century leads me to reflect on the significance of a re-awakened concern with qualities more generally.

We are moving away from a view of nature as a vast, robust, even inimical counterpart from which our labour can reap unlimited harvests. Rather we are moving towards the insight that our harsh treatment of a finely balanced environment needs to give way to behaviour more protective of its life-supporting - but nevertheless fragile - potential. For humans, this somehow implies a change from styling himself as a conquering Rambo to a person more concerned about being in tune with the preoccupations and conditions of something other than himself. Courage is needed for such a transformation.

"Qualities", as already stated, have been something impolite to use in erudite society. That is not at all true of "Change". Yet does that not run counter to intuition? Qualities are certainly something people wish to find in their lives; and change (before we specify what particular change is at issue) tends to be suspect. It may be even experienced as threatening, as something to fear.

How could it have come about that this "natural" way of reacting towards each of these two notions was inverted and has become the official, publicly supported order of preference?

The answer may be sought in the solace held out by scientific thinking. Change has been threatening (and basically remains so to this day). But what if man were to become capable of taming change, of taking away its sting? Qualities are virtually be definition that which makes something - or someone - desirable and attractive. But what if attention paid to them interferes with creating order, with taming chaos?

Our capacity, on the one hand, to endure and even to welcome change and progress and our ability, on the other, to attend to details of quality, even in cross currents moulded by that form of thinking to which we attribute the highest theoretical legitimacy: thinking in the scientific mode.

We are rarely aware to which degree we (at least in the so-called West) depend on the scientific mode. Two of its characteristics in particular impinge constantly on our valuations, aversions and decisions. The first is the objectivity of science, and the other is the power of science to predict.

Science is objective. Objectivity is without doubt an advantage, since it establishes a lawful framework for accommodating (and testing) new knowledge no matter who contributes to it. It is virtually a sine qua non in order for knowledge to accumulate, which in turn has made possible the unheard of increase in technology.

Objectivity, however, also means the opposite of subjectivity. And that conditions our view of the world in at least two ways. Firstly, there are few qualities that are independent of the person reporting them. In fact, as far as I know, there is only one: quantity. It can be measured. Measuring means gauging it against totally impersonal, incorruptible things. Earlier, in the period of the late 18th century enthusiasm for rationality in France, a set of measures and gauges was deposited in Paris. (Now, the "yard sticks" are less tangible and can even be tampered with, they are defined in terms of high frequency oscillations). It would seem that the condition for an objective world is that it would be a quantifiable one.

Secondly, an objective world is ruled by laws. On the one hand nobody can transgress them, success is achieved rather by following them. On the other hand, once it has been found that something follows a scientific law, nobody can be held responsible for the course taken. This has led to bitter debates with the natural sciences, especially nuclear physics and, more recently, molecular biology, about the degree of inevitability of technology's progress. However scientific status is not only claimed for the natural sciences. It is arrogated at times for political decisions. Politicians invoking scientific insights can thus exempt themselves from being held accountable for their actions. This is attempted sometimes with success especially for phenomena that can be presented as part of a large, complex, unfolding system; i.e. nothing can be done about unemployment for we are to believe that there exist scientific laws and thus interdictions forbidding us from caring, from showing compassion or indulging in any other of the vices of subjectivity.

It is evident - most probably we all agree here - that something in this reasoning is wrong, even very wrong. Where is the kind of rationality to put it right? It would need to be a kind of reasoning we can all agree upon, so that it receives the legitimacy needed to guide coordinated action. At present - for various good as well as devious reasons - that kind of legitimacy is the exclusive preserve of science/technology.

Science can predict. Let us now turn to the other characteristic of interest here. Very loosely it might be formulated as a despairing or trusting confidence that with science we can control the future. It is a dangerous confidence, since it is capable of kindling euphoric feelings of security and then leading to disappointment. Nevertheless, it is a claim

distantly related to a more serious evaluation of the undisputed potency of scientific reasoning.

Science seeks to unravel the laws, or eventually and ideally, the one law, governing the universe. Along the way it comes across laws of more restricted scope, yet often higher practicability and applicability.

Laws, one may say, fulfill a double purpose for us. Firstly, confirmation of the existence of laws supports our confidence that there is some lasting order in the world (a confidence similarly offered by religions). More specifically, they give us a form of understanding of how natural processes take their course. With this understanding, we can imitate nature, initiate similar processes and predict the courses that such processes will follow as well as the variants of their outcomes. Hence, in these instances, we actually can see into the future.

Secondly, being able to look without apprehension into some part of the future could not satisfy human nature - and it has not done so. That is, beyond "just looking" for spiritual confort, could it not be that knowledge of the laws of science be put to use so as to control nature, to make it yield material support for our comfort, and even more urgently, to find a secure home for man? Nature has hardly ever been experienced as particularly benevolent to man. Its unpredictable and often brutal changes have always posed threats. But now, once the laws governing nature are understood, it ought to be possible to subjugate nature to serve man.

The subjugation of nature to serve man has been the enormously successful undertaking of modern times. We have taken over from nature the initiative for changing the world and thereby also established a new position for us in - or rather, above it. Rather than making us recoil, change has become addictive. We are suddenly aware that we have succeeded in recreating nature, and the world (ought we to say existence?) almost beyond recognition. (Tourist authorities flourish on whatever is left of former configurations).

However, the threatening character of change and the leading role of nature may reassert themselves. In order to master and control change, we had to simplify it: only change processes that can be described quantitatively can be formulated as natural laws. Two consequences may be pointed out. Firstly, any change not yet completely captured as a scientific law retains frightening perspectives. There are many instances where rather unwelcome consequences followed on the initiation of one or another change processes not yet mastered.

Secondly, changes in quantitative terms are of necessity characterized as "more" or "less" where "less" tends to be an option not too often favoured. In consequence, the activity of changing as assumed ever larger proportions. And suddenly, we have to become afraid of our own capacity for changing things. Something unforeseen has been revealed, no longer just lurking on the horizon.

Nature has limits. Although these limits are not clearly definable elsewhere, they are no longer out of our reach. We must consider it a possibility that we overreach them - and ourselves - since we are ineluctably part of that very same nature. Sadly, we have only learned to master quantitative, linearly progressing change. We have come to be addicted to it, and we are dependent on "more" and still "more" to feel satisfied, however fleetingly.

This dependency on "ever more" is very deep seated. But it do not think it is an essential characteristic of being human. Rather, I suggest, coming to terms with uncertainty is one of the inescapable human preoccupations. Here, scientific thinking apparently has brought a miraculously reassuring answer. Not only change seems something we can easily handle (and by the way something we can be proud of for it makes us omnipotent, god-like) but, furthermore, in the process we can even find ourselves surrounded by unheard of comforts. Unfortunately, protecting ourselves in this fashion presupposes a world of

unlimited supplies - and also unlimited patience of those not having been given an invitation to share in the spoils. And there, a shortage in both these areas begins to make itself felt.

Certainty and security will have to be sought in other ways. A potentially very significant result could be that the need for development assistance may turn into something little related to having a high or low GNP, when each of our social entities would have to make life bearable (and meaningful and exciting) through what is left of our respective "endogenous cultural wealth". Note that this could only be regarded as a fortunate development once we all share our material resources so that basic needs (easy to understand, difficult to quantify) are being fulfilled for each and everyone.

A number of other ways are already being explored in rich and poor countries. They - and the reactions to them drawn from habitual response patterns - often shock by their rigid simple-mindedness and self-centeredness. I think here of drug use and of fundamentalist fanaticisms. There are also practitioners of esoteric forms of "internal exile", often appropriating superficially some of the more exotic, so-called "oriental paths to wisdom".

Nevertheless, what they have in common with a scientific outlook is something humans cannot do without: they offer hope to the acolyte. But obviously they tend to do this only distortedly, often in a deceitful manner and suddenly they can turn into lonely nightmares.

Thus the quest cannot end there. We still need to remain hopeful that there are outlets for our imagination, and resources for our survival, and a future in all our lives. If we could go on trusting science and our ways of using it in technology, and if the world could be safely regarded as without limits, then scientific rationality would speak to our hopes and satisfy them. More importantly, nothing could be a better induction for our children into their 21st century than the qualities demanded of scientific thinking amalgamated with technological forward-thrusting.

But, in all good conscience, we cannot any longer presume this for the next generation, nor even count on it now for ourselves.

The reason that I have strayed so far from a straight answer - apart from not knowing one - is that it seems important to me to stir up the context in which we customarily talk about quality. Qualities need to be rehabilitated as a public concern, and not remain banned to the domain of the higher subjective susceptibilities.

This rehabilitation is not an easy task. But I suggest that simply relying on quantity is not enough when we seek to prepare ourselves for the demands of the next century. In particular, admitting qualities other than quantity means to accept that eventually any answers will not be free of ambiguity.

Objectivity may once have served as a protection, agreed upon among seekers of truth, against letting self-interests and self-delusion slip into our interpretations of the world. Objectivity in a more contemporary manner simply excludes the self, leaving it to its own devices - after working hours. Objectivity is then taken as the obligation of being responsible only to logic, granting itself the liberty of eschewing consideration for the impact of initiated processes on real human beings in their real lifetime and their real world. For the sake of purity, it can also be taken to justify a disregard for the existence of any ambiguities that might stand in the way of going ahead with doing what is feasible. Consolation for troubled consciences is offered, if required at all, by bravely reaffirming confidence in scientific progress and its limitless capacity to correct what we may have done wrong (c.f. "technological optimism").

We are ignorant about whether scientific determinism and, bound up with it, quantifiability are true characteristics of nature. It may not be the case, and then ambiguity

is an essential condition of our being alive. On the other hand, it may be the case. Even so, it is for none of us to live as if in the ascertained presence of such a truth. The humbleness to admit this has distinguished the Great Men of Science, to name here only Newton and Einstein. Absence of moderation has been more often the hallmark of the initiators of technological change.

It is of course possible to refer to "quality" within a quantitative understanding of the world and thus attempt to keep quality clear of ambiguity. However, we may get then drawn into thought processes bordering on the absurd. Lord Zuckerman, in a recent review of disarmament attempts, offers an example: "By today's standards, Hiroshima was destroyed a primitive free-falling fifteen to twenty kiloton bomb. It would have been no better destroyed if it had been struck by a modernized warhead carrying the same charge" (Lord Zuckerman, "Converging on Peace", NYRB, 28.9.89, p. 31. Emphasis mine).

Alternatively, we may outgrow the intellectual habit of reducing qualities to quantity. We are suspicious of some of the changes wrought by us, but do not really manage to clear up our doubts about them by relying on e.g.. "Technology Assessment". It is then time to look around for a wider frame of reference and hence more detailed guiding principles for action and non-action. It becomes tempting to acknowledge a plurality of qualities besides quantity.

But scientific discipline and straightforward quantitative argumentation has been a reassuring corset. To loosen its stays can become a traumatic experience and also has its dangers. Any new-found freedom threatens not only old privileges but also the precarious balance of mutually accepted rules to keep the human tribe out of creating disaster. It can invite self-serving abuse, the despotism of arbitrariness. In this light, it means then much more than just enriching the vocabulary of official discourse when we allow "qualities" into the public arena.

Are we ready to admit them? Or, in case their advent be inevitable (as I am convinced), how do we prepare ourselves for living together in the world? There, scientific rationality still keeps its place for controlling processes of change. But it cannot be deemed sufficient to decide whether a feasible process ought to be initiated at all. Scientific rationality is then no longer acceptable as a philosophy of life. The challenge is enormous: bestowing legitimacy on novel ways of justifying action may result, wittingly or unwittingly, in the creation of chaos and catastrophe.

The threat, though, is not just novelty. It lies more particularly in the prospect of losing the comfort of objectivity which derives from the conviction that laws govern what is happening. A weakening of that conviction will require, firstly, that a person will need to stand behind a decision: he or she needs to shoulder responsibility. And secondly, persons, once they themselves accept being responsible agents need to trust other such persons in order for any common venture to come to fruition. This of course has always been the case. But the fiction of all-pervasive scientific objectivity and quantifiable comparisons have eased the life of decision-makers in front of the public. Let it be repeated, the "culprit" is not objectivity but automatic reliance on it.

At the centre then stands once again the task to bring to life what it means to be a person among persons, rather than an individual in the four-dimensional space-time continuum. It promises to become an expansive and many-faceted undertaking and one about which we have little communal knowledge, because its flavour of subjectivity has kept it an almost unsavoury affair. On the other hand, it is certainly a favourite of United Nations rhetoric: "to put man back into the centre of development"!

But, if we can come to grant legitimacy to that concern, then it is easy to find our way back to the theme before us. "Qualities required of education today" turns into "Nurturing of qualities in a child as the teacher's central obligation". It should be evident from the outset that we are not talking about preparing a sequence of information which the

student has to absorb. Instead, we are addressing the forming of the person, or the person's character. An "absorber of information" has a defined, definite shape, even if the absorption process is "lifelong". A "person in formation" remains unfinished, forming her/himself is "lifelong".

Fortunately, the disenchanted enthusiasm about "creating the New Man" on the one hand and on the other a spreading sceptiscism about science being "value neutral" have together prepared the ground for talking about the person: there is a certain readiness, and public legitimation, to engage ourselves in the pursuit of moral issues, and to be openly curious about our fate in the world.

Now, after all that lamentation, what can we say about the forming of a person among persons? The starting point has been that the world's material resources are limited. This poses a problem for the self-esteem of modern man. This he has based on a confidence to be able to increase incessantly his dominion over the world. In the case of any one individual, this growing exertion of power over something other, something outside himself, may be extremely vicarious or completely specious. But it is the basic convention of a culture based solely on the rationality of science and technology. A world with limits then means that men cannot continue finding their self-esteem there. But it must be found somewhere. Self-esteem, with its dimensions of hope and the experience of dignity (the human equivalents of time and space, respectively), is an inalienable condition of being a person; it is also the foundation on which the experience of certainty and security becomes possible. Without this quality, personhood ceases to exist, and with it any reason for the person to wish to exist.

Education in its task of guiding the learner along the way to personhood, needs to point out the ways in which self-esteem may be developed. In particular today, having posited a shortage of pieces of the outside world to be acquired for such ends, it might be beneficial to nurture a person's capacity to develop a certain immunity: he or she ought to become resistant to the assumption that anything outside themselves has to be appropriated a potential trophy; mostly these things have anyway only an imagined protective value.

Self-esteem needs protection. Arguably it need not be sought in the possession of things of the order of guns, bank accounts, expensive pieces of art, or indentured labour. Self-esteem can flourish when we feel at ease while moving in the surroundings in which we find ourselves. If things in our presence are in place, then they are not threatening. Now, this may sound nice even to you - but it seems not much help to us when seeking for "qualities needed in education". The reason is that we have given little thought to what is, might be, or ought to be a thing's place. And that, it could be said, is the reason that we think that they need to be subjugated.

But another way to begin to grope for safe serenity (at lease, for as much safe feeling as it is given to man to experience) is to get acquainted with the place of things, their relations among each other, their distance from us. One might say that this is what science has been doing. Yes, in part, but not quite. Scientific thinking has sought and impressively succeeded in unravelling the structure underlying the world, epitomized in the very soon forthcoming GUT, the Grand Universal Theorem. The very world, however, with warts and all, has only been allowed to serve as evidential material to that purpose. For physics, a wart is not important; what interests, is to uncover the reason why there can be wart or an equivalent protuberance. But for any particular person, a wart can - it ought not to - make the different between happiness and self-depreciation.

I have already admitted once or twice that I do not know very clearly what these qualities actually are that I am talking about. And I have given reasons for the scarcity of knowledge in this domain. I have now tried to give an inkling of what I think we ought to be searching for:

If self-esteem, with hope before the person and dignity surrounding it, were to become the aim of education, then we must introduce qualities of a new dimension to complement science. Let us call it "qualities of harmony or of fitting with the world around us". One might visualize it as the horizontal quality to be added to the vertical cause-effect or before-after dimension of science. Harmony is concerned with the relation of things and persons here and now stretching out around us to the horizon.

It is certainly no accident that such considerations are being ventured now. Harmony is something very much at the heart of the ecologists' concern. The difficulty I see is that in their argumentation they would like to be scientific. What instead seems to be needed in reality is to give legitimacy, shared agreement among all of us, to ways in which scientific-technological feasibility can be curbed and tamed so that we come to experience a world that stays fit for a species named hopefully "homo sapiens" to live in.

The prospect of material shortage recommends a certain moderation in the use of resources. But it also ought to make us weary of esoteric pastimes, that just aim at making those "feel good" who have arrogated to themselves a privileged access to the world's natural resources. The greater part of mankind is first of all concerned with sheer survival, with avoiding starvation. I hope that my remarks today are not taken as the expression of a trendy kind of class narcissism, but of the groping for what it means to be alive as one person among about five thousand million of us in a world that has, after all and unfortunately, limits.

Please allow me one final comment, directly on the education enterprise. If we are serious about making poorer countries share in the good, materially provided-for life we in the so-called west are leading, then we must share our wealth with them. To assert that just letting "them" have "our" educational systems will lead them there, is deceitful, or at best wishful thinking. Awareness of this is certainly a powerful reason for the decreasing enthusiasm about going to school in many places. Education may be a method of getting acquainted with how to deal advantageously with things (e.g. raw materials or patented algorithms), but if there are no things, education cannot create them out of thin - or thickly polluted - air. No injection of new qualities into pedagogics or the curriculum can change that. On the other hand, all this may not be construed as letting "us" off the hook in the face of patent, quantitative lacunae in educational opportunities, like those at the heart of the Bangkok World Conference in March 1990 on "Education for All".

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Enhancing the Quality of Teachers is the Priority in Meeting the Twenty-First Century Education

Part 1

Education is for the future. The benefit of education cannot be seen for several years or indeed more than ten years later. Among the students we are educating today, as regards university students, their knowledge and skills learnt in school can only be used to serve social development by the end of this century; primary and secondary school children will become qualified personnel in the 21st century. Thus, in considering how human beings will develop in the 21st century, it is impossible for us not to give priority to today's educational problems. Can today's education meet the needs of the social development of the 21st century? Is there any need for improvement? These questions should be studied by every politician and educationalist.

What will be the 21st century? The scholars of the future have various predictions. I am not a scholar of the future and can only predict some features relative to education:

1. Science and technology will develop more rapidly and lead to constant growth of productivity and the constant reform of technology and techniques of production. Therefore the world of work and occupations will be changing. Pre-occupational education must be combined with in-service education, but with pre-occupational education as the basis. Without a good and solid foundation in pre-occupational education, in-service education will be impossible to undertake.

2. The resources in this world will be further exhausted. Human beings will have to economize resources on the one hand, and on the other, will develop new resources from which new energy, new materials and new technology will emerge. This requires education to produce qualified personnel with new and high technology for developing new resources.

3. The world situation will further relax but economic competition and ideological struggles will be increasingly intense. The system that can produce personnel with firm beliefs in his or her undertaking and conscious of competition will win in competition.

In order to fit these features, we should make a start with today's education. Education at primary and secondary level will in particular determine the destiny and future of the world in the 21st century.

Part 2

People talk each day about raising the quality of education. But how can it be raised? Reforming teaching content, improving teaching equipment are no doubt very necessary. But raising the quality of teachers is most crucial in my view, because:

1. Suppose we have the most perfect materials and the most advanced teaching equipment, ultimately they will have to be used by teachers. Improving the quality of teaching will become meaningless if teachers themselves do not have a good mastery of these materials or do not know how to deliver these materials to students. Teachers have to know how to use advanced teaching equipment before they can provide guidance to students in their use.

2. Qualified personnel in the future should not only have knowledge, more important, they should have a perfect personality, be devoted and faithful to their tasks. The influence on students by a teacher's own personality cannot be replaced by any teaching materials or technological equipment.

3. Some educationists believe that the self-determination and initiative of students should be stressed and the role of teachers weakened, in order to foster students' abilities to work and think independently. Of course, teachers should not take the students' jobs into their own hands for this purpose. But their role of guidance and advice should be strengthened. By whom are the initiatives of students stimulated? By teachers. By whom are the activities of students organized and designed? By teachers. By whom is the talent of students identified and fostered? By teachers. The intelligent development of a student is the process from no knowledge to knowledge, from a little knowledge to a lot of knowledge. This process cannot develop rapidly and smoothly without teachers. It is impossible for a child without any knowledge and skills to become qualified through self-study which can only take place for people who already have the basic knowledge and skills to learn.

Thus the teacher plays an extremely important and indispensable role in education, therefore the standard of the quality of teachers themselves is the key to the effectiveness of education.

Part 3

What kind of personality and competence should today's teacher have in order to keep pace with education in the 21st century? In my view, it included three component parts:

First, they must have the sense of a teaching career, i.e. the willingness to devote their lives to education, showing affection to the children they teach, working diligently and trying to continuously raise their level of service. The fostering of career consciousness of teachers should be better emphasized in addition to appealing to the departments concerned to raise the salary and status of teachers which are currently quite low in nearly every country. Teachers should be told that although the material gain is very thin, their spiritual gain is very rich. Every teacher will be satisfied spiritually when devoting his/her life to education and seeing his/her students becoming useful to society.

Secondly, they must have professional skills and be able to deliver knowledge adequately to students, as well as simultaneously develop their intelligence. There are some different opinions over this matter:

1. Should teacher's knowledge be broader or deeper?

One opinion is that teachers' knowledge should be broader and that it is not required to be professionally very deep, their argument being that knowledge being learnt by primary and secondary school pupils and students is general basic knowledge, rather than sophisticated theory. The broader knowledge of teachers is beneficial to many needs of students in their knowledge seeking.

The other view favours teachers mastering deeper professional knowledge. The argument is that only by proficient subject knowledge can they explain profound basic knowledge to students in simple terms.

It seems that both of them are reasonable to some extent. I think the two things should be united: teachers' knowledge should be both broader and deeper professionally. However, either one of them is both relative and restrictive. So called "deeper" is to say that the teacher should have a deep understanding of the teaching subject, but not in the same way as a scientist. By "broader" we mean that as a teacher, he/she has to learn to the best of his/her ability. With the advance of science and technology, science will develop in the

direction of differentiation and synthesis. Differentiation means that science will develop into increasingly elaborate divisions and be increasingly sophisticated professionally. Synthesis means that the study of any topic will have to be supported by other subjects. This trend of the development of science demands that the teacher learn broadly as well as deeply. But the time for pre-occupational teacher training is quite limited. Within 3-4 years it is quite impossible for students to master knowledge too broadly and deeply. So, teacher development should combine pre-occupational training with in-service training. Much knowledge will have to be gained through frequent in-service training.

2. Should pre-occupational teacher training focus on knowledge or career skills?

One opinion states that it is more important for a teacher to know a great deal than to have training in teaching methods. They think that methods can be grouped and experience can be accumulated whilst working. The other opinion is that methods of educating people are more important than knowledge for a teacher, so that training of techniques should be strengthened.

Actually both are very important. Teachers should master broader and deeper knowledge as well as skillful teaching techniques. Education is both a science and an art which can only be grasped by study. We can group experience in working practice but failure is likely and it takes longer. Teacher training can deliver career techniques to students within a fairly short time and prepare them to be competent. Currently, it seems that more attention should be paid to the training of skills and methods, especially in China.

Third, teachers should be better psychologically prepared including (a) they should have ideals and be faithful to their tasks. In China, a teacher must adhere to socialists and ardently love his/her socialist motherland; (b) they should have lofty ideals and be worthy of the name of teacher, setting a good example for students in words and deeds; (c) they must be able to deal properly with relationships with students and any other groups. Education is a process of teacher-student two-sided activity. Only harmonious relationships can make this process successful. Investigation and studies prove that failure of education is due to unharmonious relationships between teachers and students, students refusing to accept teachers' advice and instruction. The basis for establishing good relationships between students and teachers is mutual trust, democracy and equality. More specifically, teachers should trust that students are willing to learn, are willing to uphold this trust and can correct mistakes if they have patient education. Teachers can only enjoy the confidence of students by trusting them first. Education will become very easy once students trust teachers.

Teachers should also establish good relationships with other teachers and parents because student development will not just rely upon one teacher, but upon the common and coordinated efforts of many teachers and parents. It is impossible to educate students well without harmonious and coordinated relationships among these educators.

In order to handle various kinds of social relationships, teachers need some psychological characteristics such as unyielding will, open personality, sympathy and willpower.

Part 4

My recommendations for enhancing the quality of teachers are as follows:

1. Adequately lengthen the time for teacher training. Within 4-year teacher training education at the higher level, students now have to learn subject knowledge and spend time on the training of teaching skills and methods. This is not sufficient in China, too little time is spent on training. It is suggested that the probation year after graduation should be used for teaching practice and be concentrated on training in teaching techniques.

2. Integrate pre-occupational teacher training with in-service training. Each teacher should be able to undergo in-service training once every five years to update his/her knowledge and generalize his/her working experience.

3. Rigorously enforce the assessment system of teachers. For this irreplaceable occupation in society to be able to enjoy high social status, be respected and attractive, and the quality of teachers enhanced, we must strictly enforce the assessment system of teachers, refusing unqualified people. However, we have to retain some unqualified people now because of the shortage of teachers. Their standards should be upgraded as quickly as possible to make them competent. Nevertheless, we can never lower the requirements of teacher because we do not have enough. Qualified teachers should be assessed once every few years, monitoring them to catch up with contemporary demands.

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If the whole course of educational development is analysed from a global and historical point of view, it can be concluded, without exaggeration, that the situation as regards the development of contemporary education has completed a certain stage of its evolution which was rooted in the Epoch of Enlightenment. Each new generation inherits a global educational complex as an unquestionable "given state" without troubling too much about the genesis, origins and history of inherited wealth. Today, humanity - taken in its literal sense - is reaping the "fruits of enlightenment" to quote Lev Tolstoy's well-known play.

The ideals of the Epoch of Enlightenment have, over the ages, developed and are exemplified to such a degree that we fear we might now witness its converse transformation. Today, therefore, every more or less sensitive educational researcher experiences subconscious anxiety before something significant, irrevocable and unnamed that will inevitably have demanded deep analysis at all levels of human reflection and implementation. For many decades something new has persistently revealed itself in terms of educational crisis, ecological catastrophe and, more constructively, in terms of no-sphere, educational ecology and a new philosophy of education for the twenty-first century.

The processes of dialectical self-negation are manifest, for instance, in the social sphere in the form of the negation of the old social order which has been substituted by a new one via revolutionary transformations. However, analogical processes in the educational sphere, when education begins self-rejection, threatens the physical survival of the human race. The educational crisis was expressed in that instead of the real culture, contemporary education and, first of all secondary education, can indirectly be accused of giving birth to pseudocultures, or subcultures which can, in all fairness, be named countercultures, or the culture of self-destruction. At the same time, the social function of education, expressed through its democratisation, has generated into vulgar egalitarianism explicit in the division of education into education for the masses and qualitative education for an elite. One can see that quantitative achievements in education are inversely proportional to the quality of education, whilst social selection becomes increasingly refined and informal.

The economic function of education has reached the critical point of hypertrophy. This has lead to a situation where growing unemployment exists in parallel to an acute deficit of a certain new "untradition", too closely linked to economic structures which rapidly lose their academic nature, individuality and, finally, their academic quality gradually being transferred to enterprises for the production of a "human capital" with the highest qualifications.

Universal literacy, the most unquestionable achievement of contemporary educational systems, is inevitably accompanied by a new kind of illiteracy - functional illiteracy - which is far most costly to society. Moreover, universal secondary education does not reduce the level of social tension in the educational sector, but simply displaces it to the higher educational "stratas", particulary those of undergraduate and graduate education. The very concept of quality and efficiency of education has lost its "unique significance" and is often directed towards the exclusion of other functions and objectives. For instance, objectives derived from the cultural and economic functions of education are nowadays revealed in diametric ways.

Mass higher education, itself the embodiment of the ideally fulfilled social function, often indirectly provokes acute social conflict and disparities. A similar situation was observed at the end of the Middle Ages in Europe, when education and all accumulated

spiritual knowledge, symbolically named "scholastica" became converted to its total opposite, reaching the highest degree of formalization. And, it is this situation which gave rise to its antithesis, that is, study of the exterior human experience and its objective formulation within the framework of scientific knowledge as a panacea to intellectual and spiritual degradation of the culture of the medieval universities.

Hypertrophied systematization and formalization, and a passion for methodologies are the first symptoms of necrosis of a system in which human intellect, whether joint or individual, takes on the role of the principal architect. Unfortunately, contemporary managers of educational reform in different countries observe the outcome of modern contradictory trends varying in education at the new level of unification of the management of educational processes, in the systematization of values, qualities, qualitative and quantitative exponents. It should be mentioned that information technology has taken on the role of the tempter, inspiring the global systematization of everything that can be formalized, depersonified, converted to the data bank and programmed.

The common tool of communication is thus converted to an aim, knowledge as such being suffocated by information.

By introducing artificial processes into the biosphere, mankind has accelerated it to such a degree that distorted biological time and space has reached the critical point for its own survival as a biological species. Today, the acceleration of scientific and technological progress is such that ecological catastrophe seems inevitable. It is also knowing what would happen if it stopped suddenly at full velocity. It is rather naive to think that the new level of technology/artificial intelligence could restore the balance of processes from the outside, with the help of some "non human" mind. It is more dangerous to attempt to raise some species of people particularly stable in the face of biological catastrophe, with steadier psychology and other exponents of the capacity for survival.

All these attempts to seek new ways beyond the limits of human nature are alone rather symptomatic. This means that in the direction of rendering external experiences objective by means of scientific cognition as the instrument of self-awareness, humanity has reached the extreme limits.

The laws of evolutionary development continuously reveal the truth that, sooner or later, the processes of quantitative growth supersede new quality. Today the observed acceleration of all processes in which humans are involved is on the threshold of transition to a new quality. Overall, this might result in a new quality of life; the beginning of the new century will be the critical point for this transition. Until now mankind has used the opportunities placed at its disposal in a rather mechanical, utilitarian and selfish manner, the human race being lead rather by biological instincts of irrational adaptation, not realizing the consequences of such activities and not taking into account experience or the lessons of the past when developing plans for the future.

Claiming the transformation of the world and nature, humanity in its middle-level image is moved by primary vital instincts and technology and encouraged very little in the transformation of human nature in the direction of humanism. What must first be understood is the interconnection of all processes taking place on Earth. In the enthusiasm of artificial activities, the human being has gradually lost ties and unity with the universe. Research into the origins of life and the primary sources of energy, that is cell and atom in scientific research, mankind has no right to advance further, to change the quality of thinking or mentality, or raise new levels of consciousness.

The conditions in which modern mankind is placed require that all the processes - social, economic, cultural or ecological - take place on Earth and in society. The road to new thinking and consciousness lies not in the construction of new systems or methodologies of global scope, but first of all in calling a halt to or limiting the mechanical and process interrelations in the socio-cultural environment, firstly in the sphere of management and

education. The new outlook is visible in the accumulation of diverse sources and opportunities for the development of the human race and society and in the encouragement of alternative development methods and activities to achieve one objective.

In this context, the role of education in developing new mentalities and consciousness is nowadays put forward. But, before education takes upon itself this responsible mission on the threshold of the 21st century, all interested groups of society must develop an entirely new philosophy of education and corresponding approaches for its realization. In the situation existing today, there is no time to wait for transformation of society, which education usually reflects as its social institution. Education must now prepare citizens for the 21st century. It is no secret that the contemporary educational complex is not yet ready to undertake new tasks. The content of education is full of mechanical and often distorted ideas about the world. Textbooks in many countries often reflect idealogical or chauvinistic traits at the expense of the national cultural heritage. The true authority of the teacher is often substituted by authoritarian methods of teaching. Education is experiencing the phenomenon of growth of conscious and personal contact with the teacher.

The process of acceleration has also been continuous in education. Today, its new quality might be seen in the sharp upsurge of qualitative requirements of general cultural education of those graduating from secondary schools, due to the increasing professionalization of higher education and its increased responsibility for the quantity and quality of national scientific research, as well as the tendency to lower educational qualifications due to the expansion of modern technology.

The permissible terms of social and spiritual maturity for contemporary youth are continuously diminishing since, in the period of graduating from secondary school, social and economic conditions require the recent pupil to be a responsible, well grounded and well developed individual with the capacity to make his own decisions as to personal, cultural and social self-determination.

Thus, looking towards the future, secondary education must take on the responsibility for the development of a socially and spiritually mature person who is functionally literate and professionally oriented and able to plan and develop his or her future, without becoming lost in a hostile environment. Local and cultural contexts of the educational environment may be quite diverse and the quality of education estimated only according to its objectives which have been derived from this very same socio-cultural environment. The diversity of culture and of humanity's cultural traditons will ultimately determine its spiritual potential and vice-versa. The standardization of culture and education leads to a contrary ardor. Cultural processes throughout the world would stagnate if all people studied the same programmes, using identical educational methods and techniques. The true aim of international cooperation and coordination in education must reside, to my mind, not in the unification of educational processes and educational systems, or in the dissemination of educational globalism, but rather in the protection of the diversity of cultural and educational traditions, in the encouragement of various experiments in education. And, however strange it may sound - in defence of the rights of the educational sector of society for self-determination and autonomy as the priority sphere of human activities - in spite of the view of education as the epiphenomenon of power or of whatever philosophical or political doctrine.

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On enhancing the quality of education through effective learner-teacher interaction

1. Learning as a two-way dynamic process

Learning plays a crucial role in the transmission function of education (preservation of existing skills, knowledge, values and attitudes, etc.) and its transformation function (innovation, creativity, reforms). It is through learning processes and learning outcomes that important qualitative improvement of education can be assessed and proved. An important aim of education is to help the learner to grow and realize his/her potentiality to the fullest extent. Without the improvement of the quality of the learning process, reforms in other areas, such as educational planning, policy and financing, cannot bear their fruit.

Learning commonly refers to any change in behaviour or capability (or disposition) as a result of interaction with the environment (physical and socio-cultural). Learning, either directly or indirectly, is affected by the environmental factors with which the learner interacts. Learning is influenced by the physical and material environment (classroom, space, facilities and equipment), by the personal environment (teacher and his/her characteristics, teaching methods, peer group), by educational contents (instructional objectives, curriculum content), by educational policy and planning (levels and types of education, school systems, school administration and finance) and also by social and community environments (parents, community members, mass-media, etc.). Some of the effects of these environmental factors are indirect (e.g. policy, planning, school administration, etc.) but some factors influence learning more directly (teachers, teaching methods, curriculum materials, etc.).

The learner is not, however, simply passively affected by environmental factors. He is also a living, active organism and is capable of acting upon the environment. He/she, given proper training and learning experience, is also capable of critical thinking, discovering, creating and actively choosing alternatives. Learning without the freedom of choice limits the learner's experience and may prevent him/her from being creative and innovative.

The learning process is a complicated one as the learner does not often respond to environmental stimuli in a mechanical or simple manner. He/she responds to them with his/her psychological dispositions such as perception, interpretation, hypothesis, imagination of the event as well as motivation, emotions, attitudes and value judgements. The same physical stimulus can be interpreted differently by the learner, depending on how he/she perceives it. An example of how a learner could be affected by his psychological interpretation of events illustrates this: We raise the question - "can you drink your own saliva after you fill up a glass with it?". The answer of course is "No" for most people, although it is an undeniable fact that saliva is always in one's mouth and throat. This simple phenomenon tells us what psychological beings we are.

Learning viewed from this angle is an active and dynamic interactive process between teachers, learners and other factors in the learning environment. The question

of the quality of the educational process cannot be answered unless both teachers and learners understand the best ways to interact with each other or to benefit fully from each other.

2. Teachers' self-knowledge

The teacher is a main agent who can organize and influence a student's learning experiences and outcomes. The teacher's influence on the learner seems substantial as he/she has direct contact and communication with the learner in everyday teaching. The quality of education seems substantially affected by the quality and qualification of teachers and their knowledge and understanding of the interactive process which occurs between themselves and learners.

It is generally understood that teachers instruct learners and that learners are instructed by teachers. However, this common sense interpretation is not entirely true; teachers do also learn from learners. They also learn about themselves by interacting with learners. It is through the evaluation of the learning process and learning outcomes of the learner that the teacher can assess the degree to which his instructional objectives are achieved.

What disciplines (psychology, sociology, counselling courses, etc.) could participate in teaching training programmes and promote the process of teachers acquiring self-knowledge? In what effective ways could multi-disciplinary courses be organized in this respect? This is an important question to be raised when the future plans of teacher education are formulated

3. Affective objectives

Teaching involves not only cognitive skills and knowledge, but also the formation of values and attitudes of the learner (affective objectives). The teacher also influences positive attitudes of the learner such as: positive and realistic self-concept; self-esteem; self-discovery; motivation; interests; curiosity; intellectual competency, as well as competency in various subject areas. Affective objectives are important because they are to create lasting effects of learning, such as positive attitudes towards learning and intellectual and social competency needed for the retention of learning.

How do teacher training programmes provide opportunities for teachers to acquire necessary skills in teaching affective objectives of education? The affective domain is more difficult to teach than the cognitive domain because the process, the materials and the methods employed for teaching in this area are vast in range and are also subject to attitudes and values already held by the teachers. How should teachers be trained to teach students affective objectives, and in what ways for different age groups of students? How should teachers help students to clarify their values and attitudes? How should they help students' values conflicts (e.g. individual vs. family, old vs. new, local vs. national)? Much conscious and systematic effort seems to be needed to reinforce teacher training programmes on how to train teachers to deliver affective objectives in school.

4. Teaching for full development of the learners

Overall development of a balanced formation has recently been stressed in cognitive, affective and physical development of learners. Living in a stressful, complex society constantly bombarded by an enormous amount of information, the learner may find that in the future it will be more and more difficult for him to maintain emotional,

physical and moral peace and comfort. How then could teachers be trained to organize curriculum contents and learning experiences which help students to develop a balanced personality? How should analytical, systematic thinking be reconciled with more intuitive thinking? How could scientific and inquiry-oriented attitudes be taught while maintaining the learner's esthetic appreciation for the arts, music, etc.? How could physical activities and sports be organized both in school and out of school? How could leisure and sports be combined? We have for centuries been accustomed to the dichotomy between emotional, intellectual and physical functions of a person. It may now be time to try to integrate the learner's thinking, feeling and physical activities. This requires a new image and a new orientation of man.

4. Teacher and community

If its outcomes are to be relevant to societal needs, learning, must be linked with community activities, values, attitudes and life styles. The transmission role of education necessitates the understanding by the learner of what is going on in real life situations. The educational contents, values and attitudes taught in school should be fruitfully linked to those prevailing in society. Education also has a transformation function which introduces innovations, new knowledge and attitudes into society. The transformation function of schools seems better accepted by the community if its members are also aware of what is happening in schools. Therefore, the teacher's role as an intermediary to link schools with the community is very important. Teacher training programmes must be more effectively designed in such a way that teachers can keep abreast of recent developments (both pre-service and in-service training), and develop more favourable attitudes and understanding towards community work.

Conclusions

It may be important for educators to pay more attention to learning outcomes and the learning process in their attempt to improve the quality of education. The teachers' role in this area is of the utmost importance. The teachers' knowledge of how the learner interacts with the learning environment and on his/her motivation, interests and attitudes towards learning. What to teach, how and when, should be based upon the teacher's thorough understanding of the interactive learning process between the learner and his/her environment. Teachers' understanding of themselves, their skills and knowledge and possible influence of their attitudes and personality upon the learner, may be very important. Indeed, teachers are required not only to be knowledge providers but also artists and psychologists who are aware of how to communicate with and relate to the learner. The quality of teacher training programmes plays a crucial role in enhancing the quality of learning, which is an important determinant and indicator of the quality of education.

Dr.Shin Se-ho
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This morning we remembered it was the 400th birthday of Comenius, the great pedagogical thinker who is known as the father of modern pedagogics. We were then amazed to find ourselves still discussing education within the boundary of the thoughts he left us 400 years ago. Really "there is nothing terribly new". This reminds us of a phrase in the Bible "there is nothing new under the sun".

I should first like to remind us all that the future and the present are not dichotomous. The future is simply an extension of the present. It is like the relationship between ideals and realities. Ideals are the outgrowth of realities and they are the criteria for the evaluation of realities.

The future carries desirable images of realities. The seed of the future has already been sown in the present. The seed of future education is already sown in educational practice, systems and policies, curriculum and instruction, qualities of teachers and their training programmes, and, finally in in-school and out-of-school learning environments.

Therefore, it is important for us to change today's education if we are to meet future demands. This will be more persuasive if we think of the target learning group, which is today's children, who are mostly at primary level. They will be the masters of the Twenty-First century. If this logic is acceptable, then we can hardly make a distinction between the following two approaches: One, to solve current problems and issues to improve the quality of education. And second, to foresee future demands and derive therefrom the qualities required of education today. Education for the future is not a discrete part of present-day education. They are two dots on the same line. Differentiation lies in whether we have a set of clearly envisioned, developmental goals or profiles, or not. Though somewhat abstract and subtle, some kind of development goals and objectives, or at least some philosophical guidelines, are usually there for researchers and policy makers involved.

The seed of education for the future is not something that is predetermined and impossible to change. Though it is difficult, this educational seed may be controlled in terms of new learning, eliminating mal-learning, and re-learning. This requires the involvement of various agencies. My point here is the importance of understanding current problems and issues in terms of their nature, dynamic causes, results and their impact, if they are not properly controlled.

Practically, we can approach this task of identifying the qualities required of education today to meet future demands in two different ways:

One is to draw up the profile of the characteristics of an educated person who, we can assume, could manage the society of the future alone. And the other is to draw up the profile of the socio-development and scenario or strategies needed to bring about the desired changes.

Several dozen characteristics of an educated person may be listed. Over the last two days, these have already been mentioned by many distinguished speakers. There have been phrases such as a person with "self-reliance", "creativity", "global consciousness", who is "morally sound", "open-minded" and so on. Amongst these, I should like to stress education for morality and elaborate its broader concept in some detail.

Morality is a kind of structure of awareness that has to be internalized. Its manifestations are faithfulness, honesty, altruism, cooperation and trust. Faithfulness is an adherence to and care for truth with all sincerity. Honesty is a righteous life, faithful to the

dictates of one's conscience. Altruism is a behavioural tendency to sacrifice oneself for the comfort of others. Cooperation is an intention to harmonize oneself with others for the sake of ensuring the community's good. Trust is a built-in sense of reliability in person to person relationships.

Stress on morality education is one way of reviving human spiritual values that have been long cherished, but which were suddenly destroyed when the influx of material-oriented alien culture began.

So that children can filter what is morally unsound and follow the dictates of their conscience, a high standard of morality has to be internalized in childrens' characters.

Global consciousness has been most frequently stressed during the Round Table discussion. And I remember the considerable time spent in finding valid and feasible means to shape it. The proposal of a global curriculum made by the distinguished delegate from Australia was one of the highlighting ideas. The UNICEF Representative in Beijing impressed us with his introduction of an exciting story of achievement in bringing the Childrens' Education Charter into reality. Unesco may try to achieve similar results in the form of a Charter providing recommendations to be used at least as guidelines by Member States or even though relevant NGOs to exercise pressure for the adoption of some principles in their respective efforts in their future planning of education.

However, considering those unique barriers which may vary from country to country, making education move towards a global linkage or network does not seem very optimistic, if not pessimistic. If we were really to consider ourselves a global family, like neighbours in a community, things would be much easier. Where this assumption is not met, advocacy for a global community will not be heard like someone shouting "there is a fire", nor equally appreciated as someone in a community pointing out the need to modernize school facilities.

Disappointingly, the concept of a global family is perceived by many people in many regions as something remote, as if it is someone else's concern. Many people are too far from each other in time and space, culturally and in economic standards, etc. Environmental problems, ecological irregularities and their danger to humankind, economic phenomena are surely happening and observed globally. Yet, education for the future is more national in nature before it becomes a subject of global concern. Therefore, national goals must have priorities in planning and designing education for the future. All too often, national goals and needs are contradictory to global needs, or in conflict with each other. How to reconcile these two valid and relevant needs will be the task we have to tackle.

Some sort of crisis of conscience must take place and be shared by relevant people, groups and sectors within and among nations. This may require several decades.

Finally, let me respond to Mr. Power's request to suggest a title for the report of this Conference. I should like to propose the following title:

"Decisions for a Better Future - An Educational Manifesto for Learning to Survive".

Dr. Ramiro Tobon
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Introduction

The topics selected by Unesco for the Symposium are very interesting, but also quite broad in their scope and I shall not therefore attempt to cover them all. After a few general remarks, I shall try to analyze the situation of teachers in developing countries such as Latin America, about which I know most.

Some questions in the documents distributed refer to problems such as the survival of life on our planet that today mainly depends on humankind. Would the human race be capable of overcoming prejudices, hatred between nations and peoples and consciously take the route of peaceful coexistence and the abolition of war?

Could mankind in general, and the most powerful nations in particular, reach general disarmament agreements that will end the threat of nuclear holocaust? And, on a smaller scale, could nations big and small reach peaceful settlement of their differences?

We could go on in the same vein, but let us stop here, be very optimistic and assume that answers to these and similar questions will be in the affirmative. Then, the enormous sums of money now spent on arms (conventional, nuclear, chemical, biological, etc) could be partially used to improve education worldwide and to move towards more balanced development in the world. But, would the political will to undertake these tasks on a global scale exist?

If the very difficult political and social problems behind the above questions could be solved, that alone could not guarantee the survival of life on our planet. The current rate of destruction of our national environment through deforestation, pollution and contamination of the atmosphere, the oceans, rivers and lakes is also an ominous threat to life on Earth.

What can we in educational institutions do to contribute to the survival of life on our planet?

The scientific and technological explosion has implied that education has been more concerned with the development of skills (both mental and manual) of future citizens with less emphasis on the development of values. This trend should be reversed and more attention paid to the development of a "global conscience", placing survival of life on Earth above any regional and local considerations, placing friendship and respect among nations and peoples above exaggerated nationalism and placing "life rights" (for all living creatures, including human beings) above the economic development of just a few countries.

The Plight of the Teachers

Educational institutions and teachers are accused of lagging behind the evolution of society. But, the same accusations could be levelled against most of the world's adult population. Change has been too fast and too great and we cannot keep up with it. Even people with a background in science and technology find it difficult to keep pace in a limited field of speciality and experience even more difficulty in discerning general trends of the rapid scientific and technological evolution taking place.

The great advances of women in order to have access to the world of work in most countries has implied that those societies place more responsibility for the education of the young on the school systems and on teachers. Adjustments such as the universalization of

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pre-school institutions, day-care centres, etc., have been slow in many countries and demands on teachers have multiplied.

If we look back for a moment, we have to recognize that in many countries just 40 years ago, society demanded relatively little of teachers. They should teach children to read and write, to have some command of arithmetic and learn a few skills and values. That was a lifelong education for most people in rural communities in many countries and many had a lot less and remained illiterate of the whole of their lives.

Now society places very serious and complex demands on teachers. They must teach science and technology, besides language, geography, history, mathematics, etc. The teacher also has to have a good basic knowledge of child psychology and adolescents. In many rural communities, the teacher also has to be a community leader involved in a variety of agricultural, health and environmental campaigns promoted by governments and international organizations.

Are teachers really equipped with the knowledge and particularly with enough support from governments and local communities, to comply with this wide spectrum of activities and expertise?

We are well aware that the answer to this important question is NO! The number of years a teacher has to study to qualify has not increased in many countries from the days when demands were rather minimal. Teacher training in many countries does not exceed secondary school level, teachers graduating at 17 or 18 with little knowledge and without the maturity demanded by their professional performance.

But, in addition to the poverty of their training, teachers are poorly paid. The most gifted and talented youngsters (with few remarkable exceptions) do not choose teaching as a profession, preferring to take up a career that provides better remuneration and status.

What can be done to change this situation? It would be very easy to simply state that teachers should be given more training, be provided with adequate means to carry out their duties and be justly paid for their work. But, will such major changes be possible in many countries over the next one or two decades?

Unfortunately, the developing countries are also the ones facing great economic difficulties, due to huge foreign debts that have turned them into net exporters of capital, increasing the deprivation of their peoples. Many of the Latin American countries find it difficult to pay the salaries of teachers (very low ones) and other civil servants. Inflation has impoverished teachers to the point where they have to take two or three jobs to in order to survive.

The trends that can be discerned at this time are not towards a substantial improvement in such a difficult economic and social situation. It would take a complete revolution of the present economic order (that would be healthy for the world) to change the situation of the developing countries. Only if the questions set out at the beginning of this paper (about disarmament for instance) can be answered in the affirmative and if there were the political will to change the economic order of the world could this situation be changed. Are we likely to see such political will during the next decade? And, if so, what do we do in the meantime, i.e. whilst we wait and try to influence the needed changes?

Possible Action

The lack of funds and also of a correct sense of priorities makes it very difficult to consider huge crash programmes to retrain millions of teachers in developing countries as an option to be implemented in the immediate future. In-service training would have to be geared to an improvement of teachers' salaries and social status as well as to an improvement of conditions in schools.

Another possible course of action would be to turn education of the young over to society as a whole. This would mean that society as a whole should be aware of such education as one of its most important responsibilities. It implies that groups in local communities, in cities, in rural areas, etc., consider themselves as part-time teachers helping schools in many ways (with time, money, supplies, expertise, etc). Private industry and business must implement policies allowing parents more time to be at home and contribute to the education of their children; give engineers, technicians, economists, administrators, etc., time to participate actively in school related activities to enrich the education of the new generations.

Teachers would then gradually evolve into coordinators of many activities and of many inputs that society as a whole should put into the education of their future citizens. In this interdisciplinary context, the role and contribution of the teacher will hopefully be more appreciated, with resultant increased social recognition.

This is probably a change that any country in the world, developed or not, will have to implement for the next generation. But, given the situation in the developing countries and the difficulties with which they are faced, it could first be tried there with the help of all interested nations, organizations and individuals seeking or in the process of implementing alternatives to traditional educational systems that have been overwhelmed by the rapid technological and scientific evolution of the planet, which has taken place without a balancing evolution of our social and economic systems.

Dr. Sang Xinmin
People's Republic of China

An Investigation of a Mode of Fundamental Education in the 21st Century - Basics and principle of planning future curriculum, subject matter and methods of teaching

The 21st century will soon be here. At the threshold of the turn of the century reviewing the past and looking into the future, we are moved by the importance of education's responsibility with modern society. The countenance or the general situation of modern society depends much upon the quality of the future mass trained by education today. This basic faith has urged us to devote ourselves to investigating the reform and innovation of the fundamental education of citizens.

The 20th century has brought about rapid strides in science and technology, as well as productive forces and vast improvements in living conditions for humankind. During the same period the human race has suffered the disasters of two world wars and successively tasted the bitter fruits of nuclear radiation and ecological crisis brought about by ignorance and shortsightedness. At the end of the century people will naturally ask "Can we in the next century consolidate and develop the achievements of science and technology and concurrently assure that these achievements will be used for creating welfare for humankind instead of causing disasters?"

The present situation is not totally optimistic. In some developed countries juvenile crimes are on the increase. Drug abuse, theft, murder and promiscuity are spreading among youth. If our future fate is entrusted in their hands when they become adult, we would face a catastrophe. The perspective would be still more tragic if the same situation was to occur in developing countries. The present educational system must not evade its solemn responsibility of avoiding this impending danger. Contemporary education presents a multi-faceted panorama. Here, the emphasis is on the cultivation of creative spirit, there the outcome is vulgar and vicious habits, in some places the emphasis is on moulding a new generation of harmoniously developed, intellectual, moral and physical personalities, where in others, the outcome is an immature generation with superficial knowledge, greedy and selfish personalities. Stern realities are forcing people to reflect on an important theoretical problem: "What is education after all?"

What is Education After All

A Philosophical Reflection on the Mission and Aims of Education

Karl Marx abstractly divided the complex process of the production and reproduction of human society into three large areas: production of material resources, production of spirit and production of mankind and disclosed the deference and the inter-relationship of these areas. This historical-materialistic view point has offered a scientific methodology whereby the essence of education may be grasped within the complication phenomena of our contemporary society.

The difference between material and spiritual production and their inter-action is well-known to man but the essential features, as well as the unique law of production of humankind themselves which is different from that of material and spiritual production, has been neglected. Hence, until now no further research has been undertaken in this respect, which has led to two wide-spread misunderstandings about education

1. Education and spiritual production are misunderstood as synonymous

Given that the process of education needs to impart a large amount of knowledge and experience through spoken and written language and other signs and media from education to the educated, people misunderstood education as imparting and memorizing a system of signs. They do not understand that only when every person in the process of learning and accepting this system of signs mobilizes his limbs and organs so as to transform the external system of signs into corresponding behaviour modes and then by means of abstract language internalizes them into thinking modes (i.e. the psychological structure of intellect, volition and emotion) so as to fulfill the integral process of freely utilizing and controlling this system of signs, is what is meant by education. Only when the process of education complies with the inner logical structure of every subject and with the laws of physical and mental development can education achieve ideal results.

2 Education is misunderstood as the development of instinct

Some people misinterpret human nature from the biological viewpoint. They do not understand that innate human character cannot be isolated from the activities of social practice and intercourse.' Hence, they associate production of "mankind themselves" with the bearing of children, clothing and feeding, the satisfaction and development of various instincts and so on: in a word, a series of physiological processes. They maintain that only when these processes can proceed according to nature, can we carry on the kind of education which "complies with the laws of nature". In fact, these processes are only the physiological prerequisites by which mankind's innate character is structured. If the process of physiological development deviates from social standards, education would inevitably go astray, i.e. contrary to the goals of modern civilization.

These two theoretical misinterpretations on the essence of education have led to two kinds of deviations in educational practice, namely, indoctrination and liberalization. The original intention of educators adopting these two lines may be reasonable: The former emphasizes the preservation of historical heritage, the observance of social standards and systematic imparting of the achievements of science and technology. These aims are obviously correct and necessary. However in the educational process, due to the negligence and misinterpretation of the laws of mental development of the learners, the heavy burden of indoctrination suppresses initiative and creative activity and converts the learners into passive containers. The latter emphasizes the inborn nature of the child, encourages curiosity, inquiry, discovery and innovation as well as stressing ability to solve practical problems and an independent personality. These assertions are undoubtedly scientifically correct and far-sighted. However, the measures and methods adopted for their realization elevate the educated to a central status and the role of a lord. Thus the process of getting educated is isolated from the fertile accumulation of human civilization and goes further and further along the road from naturalism to biological trends, leading to a serious decrease in the quality of education.

Faced with these two kinds of tragedy (from good intentions to being led astray) a correct Marxist theoretical interpretation needs to be made about "the production of mankind themselves", a unique field of social production, in order to grasp the essence and the laws of education. This line of thinking maintains that the aim of education is to build up biological structures soundly and perfectly, as well as to develop them harmoniously and fully. Based upon this, intellectual, volition and emotional structures are all interconnected and thus form the capacity for creative practice. The process of education is the process of construction of the synthetic physiological-psychological structure. The motive force of construction comes from initiative, enterprising spirit and eagerness for investigation and innovation. The mode of construction stems from esthetic standards refined and condensed from mankind's age-long civilization, the achievements of science and technology, culture and arts, as well as the universal laws of nature. The development and growth of the learner's mental structure depends upon his ability to construct by himself. Whereas, the process of construction is the

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unification of the interaction of motive force (of every educated person) and mode (with general suitability).

This is the guideline for education which places "construction" at the centre. Our base is the principles of esthetics and the laws of developmental psychology under the guidance of Marxism. The utilization of "mode" and "active force", two dialectic categories of educational philosophy, can expose the relative role of the teacher and student and their inter-relations in the process of education. Only by deep reflection upon this high theoretical level can we radically analyze and rectify such a deviation oriented towards education in the 20th century.

In educational experimentation we have found that whether the educated person's motivation for learning can increase or not depends to a great extent upon whether general abilities in the modes mentioned above can be expanded. Hence, in practice, a problem will inevitably be encountered: the heavy burden of scientific research in education. It requires that modes be abstracted (generalized as much as possible and least possible in number) from the stock of knowledge in numerous different subjects. This is a task beyond the ability of secondary, elementary and pre-school teachers. We must see clearly that in order to undertake such pioneer work in this new educational engineering which makes construction its main aim, one must be equipped with the pre-requisites of various, solid subjects at an advanced level. Hence, at the conclusion of this philosophical reflection, we launch an appeal to scientists, engineers, writers, artists, physicians and athletic coaches worldwide. In order to make mankind's production in the 21st century capable of exploring the well of happiness for future mankind, we ask you to discover or design operational modes and thought modes with high general practicality, suitable to the age levels of pupils from the field in which you have achieved mastery, so as to support the great cause of innovation and development of the system of fundamental education.

The Challenge to Education in the New Century and Our Strategy - Bases and Principles of Future Curriculum Subject Matter and Teaching Methods

Concurrent with the implementation of universal education, complying with the quality of talents demanded by the 21st century, previous experimental research before launching educational reform is a quite pressing strategic task in the development of contemporary Chinese education. The China National Centre of Educational Development and Research has already founded the Division of Experimentation and Research in Future Education which is exploring the mode of fundamental education in accordance with Chinese characteristics. It is planning and establishing an experimentation research base, unifying educational science, experimenting in educational reform and teacher training. During the founding of the base, we have delved into the challenge faced by education in the 21st century and proposed some important strategic measures:

1. Science Rapidly Transferring into Technology and the Early Impregnation of the Systematization of a Modern Basic Technical Structure

In this century, an outstanding feature in the development of science and technology has been the marked decrease in the duration of the transfer of science into technology. This shows the great increase of mankind's practical, creative ability. Science is the summum of systematized experience and abstract of theorization. Whereas, the transfer of science into technology which in turn transfers into a productive force must, on the one hand, go through the process from abstraction to the practical synthesis in thought i.e. synthetically utilizing the knowledge and theories of all related subjects so as to design a plan for practice, and, on the other, based upon this plan, must select and create the necessary tools, equipment and other material means. The unified whole of these two aspects is composed of various kinds of complex technical structures in modern society. This is the foundation of modern man's ability in creative practice.

When Marx investigated the laws of development of human society, he valued research studies into the history of technology and social realities and disclosed that the technological structure is an essential structure, unique to mankind. The evolution and development of a technological structure is the inner motive force in the development of human civilization. When describing the origin of mankind and the essential difference between human beings and animals, Marx emphasized the making and using of tools and called the technological structure composed by the interconnection of mankind and his tools "the productive organ of the social human being". He further pointed out that it is due to the formation of this previously nonexistent extra-biological structure that mankind can be raised and segregated from the animal kingdom. After the birth of human society, the continuous expansion and perfection of the external system of tools and the increasing sophistication of the internal psychological structure of technology (technical skill, volition and emotion of various patterns formed in the process of using and controlling the system of tools); the "dynamic double-track development", both intercoordinating and mutually supporting is where the secret of the accelerated development of human society lies.

In modern society the system of tools is already maturing into the intellectual machine which is extending the function of the human brain. Accordingly, prospects for the development of mankind's psychological structure of technology and creative practical ability are even more far-reaching. How can we mould a generation of new human beings who can freely control and override the complicated technological structure of present society? This is a timely topic, faced by educators of all countries. Moulding the modern psychological structure of technology is different from teaching the technical skills of the ancient manual artisans and technical workers in the early years of the industrial revolution. The former needs both the systematic understanding of scientific theoretical knowledge and practical training in the use of various material production tools. Even more, it needs training in the ability to design tools and equipment based upon synthetical application of theories. Only coherent possession of all three levels of ability render it possible to form the highly complex psychological structure of technology needed by the subject of creative practice in modern society. Neglecting the moulding of the student's psychological structure of modern technology is one of the most outstanding defects in the system of fundamental education. It is the cause of many shortcomings in the graduate's capacity and personality, producing significant impact upon the quality of citizenship both now and in the future. In order to rectify this deviation as soon as possible the reform of our fundamental education for the 21st century must stress the early training and systematic nurturing of the psychological structure of technology and make this the starting point and basis of moral, intellectual, physical and athletic education. The psychological structure of technology includes many elements, such as volitional and emotional elements. Whereas, training needs to begin with the construction of a superb operative structure of the students. The ambitious ideas, noble aspirations, a sense of historic mission, a sense of social responsibility, deep sympathy and ample creative enthusiasm etc. which moral education can provide must all be based upon rigorous and perfect manifestations in everyday labour, social and public relations and other modes of behaviour. In order to gain broad knowledge, wide horizons, keen and wise understanding, deep insight, designing ability in resolving difficulties and ability in strategy for solving contradictions and so on which intellectual education can absorb and provide, all these must go through the process of active operation in acquiring knowledge and information in a systematic and orderly fashion so as to assimilate it into flexible and fluent intelligent activities. Here, it is still more evident that physical education, aesthetic education and manual skills cannot be isolated from sequential and gradual operative practice.

Hence, from historical and present realistic operative activities and technical structures, we can condense and refine typical modes of operation which are adjusted to the respective age levels of the child's physical and mental development and can effectively mould intellectual, volitional and emotional psychic and physiological structure; then we introduce them into the curriculum structure in fundamental education, permeating all school subjects, thus completely turning away from traditional rote memorization. This is an

important principle for innovation and planning of future curriculum, subject matter and teaching methods.

2. Expanding the Great Hall of Knowledge, Examining and Reconstructing the System of Basic Concepts

Mankind's science and technology, culture and social structure are advancing with unprecedentedly rapid development. Thereby, radical changes have taken place in the basic concepts as well as in the theoretical framework of many traditional disciplines. All kinds of new disciplines are being established. The expansion of the great hall of knowledge and the changes in its foundations present serious challenges to fundamental education. The educators of all countries face a pressing task of timely reflection and comprehensive examination of content and structure as well as a series of basic concepts and categories which have been steadfast for many years in fundamental education.

Many concepts which have been bypassed and even discarded by the developments of science, today still strongly occupy elementary school subject matter and the minds of youth. These concepts are serious obstacles to subsequent learning of scientific concepts and laws by students. For example, the concept of "weight" in elementary school arithmetic exercises and natural study lessons has confused the two scientific concepts: mass and gravitating force thus obstinately maintaining a misconception that "the downfall of a heavy object is its innate nature". Later it greatly increases the difficulties in forming the two basic concepts in physical science, mass and gravitating force. Many other such examples could be cited. For instance, the conception that force can exist separately in a single direction: the electric current flows from the positive to the negative pole ..... All those concepts must be cleared out of fundamental education as soon as possible.

On the other hand, many important basic concepts in the vast domain of modern science have not yet been integrated into the system of basic knowledge and concepts. For example, atomic structure and the quantitative law governing the number of electrons in the orbit rotating around the outer layer of the atomic nuclei is genuine basic knowledge discovered in the border area of physics and chemistry in the 20th century. It can disclose many secrets of nature. However for a long time such knowledge was considered too advanced and abstract to be taught in the lower classes. As a result, elementary school and junior high school pupils can only deal with the odds and ends of phenomena. The knowledge and experience of nature accumulated over many years cannot be organized and structured in accordance with the structural patterns of modern science. A series of omissions, difficult to make up, were left in the intellectual development of young pupils. Many such instances can be cited, e.g. the numerico-theoretical structure of any number can be demonstrated by means of the form of the prime factor product; method of inter-transfer between the decimal system and the form of scientific recording of numbers; the micro-structure of the cell and the law of embryo development and the frame sketch of logical procedure of thinking. All these are the foundation stones of the great hall of modern science and technology and all should be introduced early into the curricular of fundamental education by means of objective, modelled, operative and systematic instruction. We can, thereby, hasten the innovation of fundamental education so as to lighten the burden of the pupils in learning what is more generally applicable and rigorous, logically coherent with increasing depth and breadth.

3. The Expansion of Mankind's Social Demands and Excavation of Non-Intellectual Potential

The on-going process of human civilization not only begets unprecedented development in science and technology and accordingly in the intellectual structure of individuals, but also renders increasingly complex the economic, political and cultural structure of society. Accordingly, the levels of human demands are continuously extending. Future fundamental education must highly value the exploration and training of various non-intellectual potentialities in parallel with endeavours in intellectual development.

The exploration of non-intellectual factors is shown in many aspects.

Physical culture is highly regarded in traditional education and should persist. But competition in athletic skills should be controlled. The function of strengthening a healthy body should be stressed in physical culture, emphasis being laid on the many-sided, balanced development of the qualities and functions of the body, skill and will-power.

Investigating the modern pattern of moral education is a topic which must be regarded as important in present and future education. Man is not an isolated individual, but a social being. The behaviour of the social being cannot be governed only by instinct and individual demands and desires, but must comply with a whole set of behavioural standards long established in human society. With regard to the early training of children's habits of good conduct and moral thinking, an abundant, valuable heritage exists in the moral education of ancient and modern times both in China and abroad. This heritage should be summarized and expanded. However, moral education is of a strong social and historical nature. Moral education in a class society evidently bears the brand of a class. Moral education in a rapidly development and changing modern society shows still more sharply the characteristics of the times. The moral standards in a modern society show not only the nature of historic continuity and relative steadiness, but also needs renewal and development following the social, economic and political changes. Hence, the modes of moral education of the 20th century required not only that students be trained to observe the moral standards of society, but also that they be trained to evaluate and choose correctly the various concepts of thinking and ways of behaviour. In addition to teaching aspiration and enthusiasm for a healthy personality and noble ideas, moral education should be organically linked to all other phases of education. By widening the student's vision, moulding his sentiments, imitating typical examples and mastering laws so as to discipline his courage in overcoming difficulties and stalwartness in recovering from failure and defeats, the great mass of China's younger generation can persistently maintain an atmosphere full of vitality, moving ever upward under the complex social conditions of reform and openness and thereby to grow up as creative, practical, independent personalities, self-ruling, self-determining and self-conscious.

In modern society the most abundant and complex level demanded by mankind is emotion. Emotion is mankind's civilization in coagulation and also the main scale for measuring the standard of civilization. One of the effective means of training emotion is aesthetic education. Future society demands that every member of society have aesthetic judgement and the ability to appreciate the cultural and artistic heritage of the world, as well as the ability to enjoy and utilize this spiritual nourishment so as elevate the pursuit of his personality and his artistic appeal and conception. Moreover, he should be able to personally participate in cultural and artistic creation and to experience the pleasure of aesthetic judgement. The general development of aesthetic judgement and appreciation would help everyone to overcome both individual and national self-centredness leading to mutual understanding and cooperation between peoples. Only through aesthetic education can the educated person adjust himself both physically and mentally through the modes of beauty, to prevent both physical and mental illness and to avoid ugly hobbies and evil habits harmful to both the individual and to society. Thereby, we can attain the high-level unification of beautifying the self, society and nature.

4. "The Principle of Embryo Development" in Subject-structure Teaching

Following modernized reform in the content and structure of fundamental education, the rate of progress and depth in the teaching process will increase continuously, whereas, time for teaching and the total quantity of subject matter are not permitted to expand. How shall we lighten the students' burden in learning whilst increasing the rate of progress and degree of depth? This is a difficult problem faced by educational reformers worldwide. Through much investigation and discussion a ray of hope has emerged to make the basic structure of every school subject the key point and core of instruction: Whether we can or

not carry on instructional reform along these lines depends critically on how to render the abstruse and abstract subject structure comprehensible and acceptable to children. Many years of experimental research have gradually led to the discovery of an important principle known as "the principle embryo development".

Embryology discloses that every physiological organ of the bio-entity in the process of embryo development does not grow up and is not formed sequentially by parts, one after the other. But the structure of every organ in the early period of embryo development breeds and germinates almost concurrently. At the very beginning, it has already experienced a leap forward from nothing to what it is. Later on in the process of harmonious development, each organic structure experiences a series of metamorphoses or even qualitative variations to become mature and perfect. Contrary to this law, it would inevitably become a deformed foetus. This law of embryo development also exists in the child's physical and mental development and can never be violated, otherwise it would result in maladjusted physical and mental development, even in deformation. However, the content structure of fundamental education as well as the sequential arrangement in teaching each subject is shown by blocks on the schedule according to the categories of knowledge. Each category is self-contained but demands completeness, rigorously maintaining the exactitude and perfection of the system of signs as such. On the one hand, it results in the creation of numerous difficult teaching knots, some of which are impossible to cross for children at those age levels of mental development. On the other hand, the most favourable time for developing the potential of the child is lost, stifling and even suppressing the multiple capacities and creativity of the child.

Based upon such understanding we have already begun to carry out, fully observe and embody "the principle of embryo development" in planning curricular structure and content of subject matter, as well as the rate of progress. Based upon the multi-level nature of human psychic structure, we request that the different organs according to the psychic structure on the shallow, superlative and deep levels be allowed to develop concurrently. Let those subjects and various means which can aid the different organs and various factors to develop harmoniously appear before the children in parallel so as to form their many-sided capacities, to control things and inlay together side by side the various physical and mental organs, as well as to form a fully-fledged, organically interconnected whole.

Ladies and gentlemen, experts in similar fields, facing the reform of future fundamental education, the experimental research base should become a mode of system-engineering in education; this task is quite arduous. It demands the devotion and endeavour of generations of fellow workers. From now on, we shall look for opportunities to delve into problems encountered in the on-going process of experimentation, together with educators and specialists of all walks of life worldwide.

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Improving Learning/Teaching in the Third World

Introduction

What the 21st Century has in store for mankind and the diverse nations and peoples is a matter for speculation as well as for cautious projection. Strategies can only be provisional, subject to revision periodically. Hence there should be a great deal of flexibility in order to ensure adaptability.

There are general considerations which should be constantly reviewed by educators irrespective of their countries, levels and disciplines. Most of these general issues are raised in the background papers, especially the Discussion Guide, ED/89/CONF.810/2, Section III. Discussions may be wide-ranging without specific results being achieved. It might be better in most cases to limit the scope and get down to concrete steps which would improve education, especially from the pupils' point of view.

There are wide differences between countries, in particular between the developed world and the developing world. The educational systems of developed countries with which I am familiar (England and France) appear to require improvements here and there to cope with foreseeable demands over the next twenty years or so. Developing countries have greater tasks facing them: they have to improve a great deal on what is available as well as expand and extend considerably educational facilities which must necessarily compete with other priority areas, such as health, agriculture, etc. Education is seen in the 3rd world as one of the vital factors for national development and even for nation-building. No wonder that in countries such as Ghana, a relatively high percentage of the national income is spent on education and also that there appears to be a perpetual debate as to inadequacies of the system with proposals for reform being discussed sometimes passionately: e.g. junior secondary schools and university rationalization.

Suggestions for improving learning/teaching in formal education

The problems of formal education are well-known. The diagnoses of the ills usually centre on the following aspects:

(a) Teachers: inadequacy of training, lack of motivation and tendency to drift away, the brain drain, externally and internally;

(b) Pupils: changing attitudes towards education.

(i) Success in life (in material terms) can be achieved outside formal education: trading, farming politics;

(ii) Education must be geared to obtaining secure jobs (hence science students go in for medicine, engineering, agriculture, even administration;

(iii) Relevance of education is parochially interpreted;

(iv) Examination-mindedness, all efforts being channelled to ensure success: learning by heart of "correct" answers, teachers' views;

(c) Material constraints: shortage of teaching materials, suitable textbooks, and other literature, even basic implements such as paper. Science laboratories are often inadequately equipped;

(Despite the budgetary provisions, which, on paper might seem adequate or even generous, many schools simply do not operate in ideal conditions.)

While Governments, educators and pupils can contribute in different ways to improving education to meet the needs for the 21st Century, significant improvement can only come about if there is a change in the minds of pupils towards the goals of education.

The main thrust of all our efforts should be directed to the root cause of inadequate education: how to transform the passive pupil/schoolchild/student into an increasingly active researcher?

Educators, society and pupils must play a part in bringing about this transformation. In particular, the following steps should be envisaged:

(a) Education should be considered as a means of improving the performance of the mind in its efforts to understand. Discipline, attitudes must be encouraged so that pupils should be engaged in a perpetual quest.

(b) Less emphasis should be placed on the ability to reproduce knowledge, data, opinions available in textbooks. Static knowledge should be considered as basic background materials which could be taken for granted.

(c) The pupil as a researcher should be helped or guided, rather than taught.

(d) The teacher, himself a perpetual researcher, should inspire and lead rather than hand down knowledge.

(e) Subject matter, data, information on the "state of the art", critique, etc. should be provided as reading material, handouts, etc., but should not be reproduced as examination answers. In other words, examinations have to be devised which test, not the subject matter, but the discipline and attitude.

(f) Educators and examiners therefore have to work out new examination techniques.

(g) The increasing role of interim and continuous assessment should be encouraged, with the necessary safeguards, to reduce the importance of final, end-of-the-year examinations.

(h) Governments and society should devise additional means of assessing pupils applying for employment. Interviews, performance in impromptu aptitude tests should also be taken into account, and less importance attached to paper qualifications.

Conclusions

Educational reforms fail to result in tangible improvements perhaps due to a lack of will, political and otherwise. If there is to be a real change towards education, this discussion should be at all levels and involve especially the pupils.

Teachers should be encouraged to discuss with pupils the changing goals of general education, apart from the acquisition of discipline and investigating attitudes in any subject area. The change in attitudes towards education would be an important contribution towards preparing youth for the 21st Century.

IV. CONCLUSIONS

Dr. Colin N. Power
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In 1971 Unesco set up an International Commission chaired by Edgar Faure, the Former French Prime Minister. The Commission's first report Learning to be was published in 1972. Its first and most basic recommendation was that lifelong education should become the master concept for educational policies to cover both developed and developing countries.

The vision of education embodied in the report has had a significant impact on educational policies and practice in many countries.

This Round Table and Symposium faced a challenge no less daunting. Unesco's hope is that we could make a start on the development of a master concept for educational policies in the 21st century. It is a very important challenge for both Unesco and China.

During the Round Table it became clear that whereas the great challenge facing the Faure Commission was that of conceiving of education being more than the preparation of children for life and work provided by school, we have now moved to one in which education for all individuals was to be seen as a lifelong process. It was seen moreover as a process involving both formal and informal mechanisms. In reflecting on the challenges of the 21st century, we could not but strongly reiterate the importance of this master concept. Indeed it remains the foundation of our work.

Whereas in 1970 the challenge seemed to be for the continuous development of individuals, in the 1990s the challenge extends beyond this - to communities, to nations, and to humanity as a whole. We slowly but surely recognize that we face major global threats to survival. As the Bruntland Commission insists, we must prepare for "our common future". And so the concern is not just that individuals continue to learn and develop, but that societies do so collectively.

The conception of the Faure Commission then needs to be extended to the "learning society", one in which we reconceptualize the formal and informal general education programmes for adults and children in all parts of the world. This needs to be done in ways such that we do have a common future.

Our concern is that greater attention be given to confronting the major threats to the quality of life in the 21st century in the development and implementation of educational programmes at all levels. Our discussions focused on three broad integrated themes.

1. Caring - the need to build into educational programmes the systematic opportunity to develop the capacity to care - about one's own physical, socio-emotional well-being, about others, about other species and the global environment;

2. Competence - the need to seek to extend individual and collective competence in key areas (linguistic, scientific, technological, etc.);

3. Cooperation - the need to develop skills and experience in cooperation, combining caring and one's special areas of competence to address major problems facing communities (peace, poverty, health, food production, etc.).

To "care" implies more than a soft emotion - it means that we are committed to act directly to tackle responsibilities which lie within our capacity in such a way that we do directly contribute to improving the quality of life for all. It also implies that we recognize that we cannot solve problems if we lack the knowledge and skills relevant to them, and if we do not learn to work cooperatively with others in addressing them.

The two reports (Round Table and Symposium) provide an excellent springboard for what must be a continuing dialogue, one Unesco hopes will be taken up at the national level and that we can also mobilize at a regional level.

As I look at the recommendations, the largest challenge for Unesco in the 1990s will be that of assisting in the formulation of current guidelines for dealing with issues which are of global significance.

1. We have much on Environment Education, much on localized problems of pollution and resource use, but little as yet on global change. We need to follow through the Bruntland Report to understand its implications for the educational reforms needed to meet the needs of people in the 21st century. Initial discussions with ICSU and UNEP have been undertaken by Unesco with a view to developing curriculum materials on this theme.

2. Lack of material for general education - including formal programmes and media packages on such issues as debt and poverty. We will make a start on illiteracy during ILY, and begin to discuss debt and poverty in WCEFA.

We are indeed concerned about lack of understanding of economic options by all - including economists - and the reliance on econometric models which measure outcomes in a short, limited time and cultural frame.

We should certainly not see the whole orientation of formal education as if preparation for paid employment in a full-time job is the only measure of rate of return.

It is clear that in the 21st century, indeed now, for very large numbers of people this is not a likely possibility, nor is it a desirable one. One must, in evaluating economic policy (including structural adjustments) ask serious questions about the wider social, educational and environmental impact of what is proposed.

Also there is a lack of understanding about the importance of individual and collective responsibility to contribute to maximize productivity of those goods and services which do make a demonstrable difference to quality of life for all.

Problems of rural development are still acute in many places. The Report makes it clear that education policies must facilitate rural development and productivity. Living in a city, it is easy to forget how dependent we are on nature and on rural production.

It leads me to want to express concern about the consumer society and to ask whether we can in the 21st century continue to survive if existing patterns of consumption continue and are extended.

As a boy, my family was not wealthy. I grew up on a farm. I learned that the latest fashions for clothes and cars are not critical determinants of the quality of life. The importance of developing knowledge and skills, adaptability, closeness to the earth and one's neighbours were far more important. Most of all perhaps we all must learn to care enough to take action to confront the causes of injustice, poverty, illiteracy and inequity in the world. While these persist our educational blueprint for the future will remain just that - a blueprint, not an effective programme.

We have learnt here, and indeed repeatedly in Unesco forums, that there is far more which joins the people of the nations together than divides. We learn anew the importance of society to listen and to understand the concerns and needs of others, and to act responsibly, individually and collectively.

Unesco is particularly grateful to the Chinese National Commission for Unesco for their continuing willingness to do everything possible to ensure the success of this meeting.

A great deal of work was done in preparation and behind the scenes particularly by the China Association for Science and Technology and the National Centre for Educational Development.

Our deepest thanks are also due to the State Education Commission. All of us were deeply honoured that the Premier Li Peng spent much time with us. The clarity and comprehensiveness of his comments on education priorities and issues in China have left a lasting impression on us. Gratitude is also due to their Excellencies, Professor Teng Teng, Mr. Dong Chang, Madam Hao Keming, and thanks to the participants, particularly to the rapporteurs for their excellent work.

Finally, I should like to give an assurance of Unesco's determination to continue to cooperate with China. Activities like this Round Table and Symposium and the operational projects can contribute to the development of its immense human resources.

DISCUSSION GUIDE

ED-89/CONF.810/2
Paris, May 1989
Original: English

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

International Symposium and Round Table

QUALITIES REQUIRED OF EDUCATION TODAY TO MEET FORESEEABLE DEMANDS IN THE TWENTY-FIRST CENTURY

(Beijing, People's Republic of China, 27 November-2 December 1989)

DISCUSSION GUIDE

I. INTRODUCTION

Future and Quality are key concepts in Unesco's Draft Medium-Term Plan (1990-1995) (draft 25 C/4) and its subsequent biennial Draft Programme and Budget for 1990-1991 (draft 25 C/5).

The Draft Medium-Term Plan (1990-1995) has put forward a future oriented programme, Education for the Twenty-First Century, whose overall objective is to launch concerted action for improving the quality and relevance of education and to adapt educational content and methods to the requirements of contemporary societies (draft 25 C/4, para. 86).

The International Symposium and Round Table are intended to clarify the philosophical foundation of education by providing education with long-lasting goals in a multi-disciplinary perspective, and to suggest the qualitative requirements of education in order to prepare young people for the twenty-first century. Such a goal-oriented approach to the future of education may serve as a starting point for other Unesco programmes and activities which are expected to examine various dimensions and aspects of the quality and future of education.

The International Symposium and Round Table will be followed up by a series of meetings in the next few years, whose main concern will also be the quality of education.

The World Conference on Education for All - Meeting Basic Learning Needs (March 1990) will deal with providing good quality primary schooling for all children around the world and literacy linked with life skills for adults to enable them to cope with the demands of the modern world. The special theme of the 42nd session of the International Conference on Education (ICE) will be literacy education, as a contribution to the International Literacy Year (1990). Two regional Conferences of Ministers of Education and those Responsible for Economic Planning in Africa (MINEDAF) and in the Arab States (MINEDARAB), and the fourth session of the Intergovernmental Regional Committee for the Major Project in the Field of Education in Latin America and the Caribbean (PROMEDLAC) will also be held during 1990-1991.

The expected results of all these meetings and the aim of Unesco's efforts in this field are to stimulate the reflection of Member States and their institutions on the future of education when devising plans and strategies for renovating the education systems and practices in the years to come.

II. ROUND TABLE (27 November 1989)

A. Objective and expected results

1. The objective of the Round Table is to promote interaction between specialists representing the scientific, socio-cultural and economic sectors and those from the education sector. It will attempt to identify the challenges to, and requirements of, education in the coming decades, while taking into account foreseeable socio-economic, socio-cultural, scientific and technological developments.

2. The results of the Round Table discussion are expected to stimulate and guide the subsequent Symposium by drawing the attention of Symposium participants to the major goals, objectives, orientations and roles which education should strive to achieve if it is to prepare young people for life in the twenty-first century.

3. The expected results of the Round Table will therefore be to propose a set of clearly-defined, long-term philosophical goals for education and, in particular, a more dynamic, far-reaching and challenging new orientation and concept of education. The outcomes of the Round Table, together with those of the Symposium, will be made available to the international community at large, in order to stimulate reflection and further debate on education for the coming decades when helping to prepare younger generations in different regions of the world for future life in the twenty-first century.

B. Questions

1. Participants are invited to express their views and opinions freely on what education should do today and in the near future, referring broadly to ethical, moral, philosophical, socio-economic and socio-cultural aspects and issues of contemporary and future society.

2. Questions such as the following could, for example, be raised (this list is by no means exhaustive):

   a) What challenges will humanity face over the next twenty to thirty years? What are likely to be the developments and transformations in the socio-economic and cultural environments and in scientific and technological innovations? How will these future challenges affect the lives of individuals, society and socio-economic and socio-cultural activities?

   b) Given these challenges and their impact, what are desirable courses and orientations for education? What are the alternatives, the new and more dynamic concepts and goals of education, particularly with a view to helping young people to cope effectively with future challenges?

   c) The present and future world may compel humanity to establish more and more effective and vigorous forms of regional and international cooperation for the survival of the human community in dealing with political, economic, scientific, communication and environmental issues and problems. Are there any universal ethical values and moral attitudes which transcend all cultures and can therefore be shared by all members of the human community? If so, what is the role of education in promoting such values and attitudes? On the other hand, how can education deal with culture specific (e.g. national, local) values? How can education help young people acquire the understanding of both universal and culture-specific values? What is the cultural role of education in reconciling these two types of values and in finding ways for their mutual enrichment?

d) Given the rapidly changing environment of the world and society which may require the widest possible projective thinking, what are the necessary skills, know-how, attitudes, cognitive styles and personalities necessary for young people, not only to survive in the twenty-first century but also to create a force to change and shape that century? How could young people be helped to develop a balanced personality (physically, intellectually and emotionally), constructive attitudes and values towards others and society as a whole? What should education do in this respect.

e) In a world of continued information explosion and of new developments in information and communication technologies, how can young people today be assisted in developing skills to find, critically select and assess information and to maintain an autonomous and independent state of mind, while utilizing these technological means to the fullest possible extent?

f) International mobility is expected to continue to increase in the twenty-first century. How could young generations be assisted in learning effective and meaningful inter-cultural communication and human relationship skills, attitudes and values? What orientations or goals should be suggested for inter-cultural education.

g) What roles can education play in reducing the gap and inequalities preventing young people from participating fully and actively in the social and occupational activities of their respective societies and of the international community.

h) Education often lags behind the societal and technological developments of society and there may be a gulf between the socially-required skills and knowledge and what is actually taught in schools. Renewing the education process to keep pace with the socio-economic requirements of society may necessitate the cooperation and stimulation of non-educational sectors for its management. Who could be the potential partners of education? What educational roles can the family, enterprises, communities, youth movements, professional organizations, religious and cultural associations, etc. play? What type of relations should education establish and maintain with these groups?

III. SYMPOSIUM (28 November - 2 December 1989)

A. Objective and expected results

1. The Symposium will continue the interactive discussion between education specialists and those in other fields, shifting in focus from the ultimate goals of education to the more specific qualities required of education on the basis indicated by the Round Table.

2. Thus the main objective of the Symposium will be to identify, through consideration of the main conclusions of the Round Table, the major qualitative dimensions required of education in order to help prepare the younger generations for life in the twenty-first century.

3. The expected results of the Symposium will be a set of suggestions and recommendations on the qualitative dimensions required of education, with a view to stimulating and guiding the educational decision-makers, administrators and practitioners who will be important contributors to the renewal and innovation of the education process in the next ten to twenty years.

4. The Symposium will not discuss post-secondary education which as reviewed at the 41st session of the International Conference on Education, January 1989, but rather will focus on general education covering, depending upon the educational context of a given country, basic education, general education and vocational training. Nor will literacy programmes be discussed since they will be thoroughly examined during the International Literacy Year and at the 42nd session of the International Conference on Education.

5. The Symposium will also deal with different modes or types of education - formal, non-formal and informal - and particularly the complementary and mutually supportive roles these should play and how better articulation between them can be achieved.

6. The qualitative requirements of education are complex and multi-faceted even in a given local or national educational setting. Given the diversification of educational philosophies, policies and practices and the developmental stages of different regions and nations, the meeting is not, therefore, intended to produce a sole definition of the qualities required of education. Its aim is rather to:

   a) Discuss the diverse qualitative demands and conditions which should enable implementation and practice of identified qualitative objectives for education today and in the future;

   b) Point out shared or common concerns and issues on the qualities required of education across different regions or nations, as well as their differences, centering around the concept of the qualities required of education which may be linked to specific socio-cultural environments or conditions;

   c) Make suggestions and recommendations on ways to improve the quality of education, particularly the type of regional and international cooperation desirable to meet this end.

7. When discussing the qualities required of education and presenting various views on the subject, it would be appreciated if participants could pay particular attention to the following dimensions or issues which are expected to affect and shape education in the twenty-first century:

   a) The educational implications of moral, ethical and cultural values;

b) The impact on and implications for education of scientific and technological developments;

c) The educational implications of communication and the impact of communication and information technology;

d) The future world of work and its implications for education.

8. The question of the qualities required of education today and in the future can encompass a considerable range of issues and problems at different levels and in different types of education (formal, non-formal and informal). Unesco plans to organize an International Congress on Educational Planning and Administration in 1990 to discuss extensively educational policies, management, financing, etc. The Symposium may therefore concentrate more specifically on the processes and the analysis of microsystems closely linked with teaching/learning situations inside and outside the school system, while paying close attention to the work-related factors (laid out in paragraph 7 of the present document) which education must take into consideration.

9. Participants may wish to draw attention to the qualities required of education in its following dimensions:

a) Goals and objectives
b) Content
c) Methods and settings
d) Assessment
e) Learners and the learning process
f) Teachers and teacher training.

B. Questions

1. Educational implications of moral, ethical and cultural values

Education inevitably involves value judgements; the setting of educational goals is not a value-free process. In which direction should education be heading and which alternatives should we choose for the future content of education are questions which inevitably involve value judgements. Taking into consideration the ultimate goals of education proposed by the Round Table and the foreseeable socio-economic and socio-cultural requirements of the twenty-first century:

a) What would be the relevant goals or objectives of education which could contribute towards the enhancement of the quality of education?

b) Whose goals should education consider and who should participate in goal-setting in education?

c) The values, once internalized and understood by the learner, may exert a long-lasting influence over the individual's attitude and behaviour. Considering value variations in diversified educational settings of different regions and nations, what types of values (particularly of a non-traditional kind) should education emphasize?

d) What types of cultural values should education promote and for what purposes?

e) How should the value-oriented content of education be delivered? Are there new ways of teaching and learning values

2. The impact on and implication for education of scientific and technological developments

The daily life of the individual and of society is expected to be more and more permeated by science and technology in the twenty-first century. The ever-increasing and potential contributions of science and technology to national development have been widely recognized in both industrialized and developing countries. The impact of science and technology has been observed not only in the economic and professional spheres of the life of the individual and of society, but widely in daily life situations and activities.

The main purpose behind a scientific activity is to build up knowledge, to give an explanation of something observed and to diagnose the nature of a given condition. The purpose of a technological activity is, on the other hand, to solve a particular problem by the application of knowledge and to extend the range of possible action.

Yet it is clear that both science and technology share the same basic goal - attempting to make sense of our human experience and to improve the conditions of our life by working upon the natural and man-made environments through reflection and action.

The planet is facing serious, far-reaching environmental and atmospheric problems: worldwide industrial pollution of rivers and coastal waters, increasing amounts of carbon dioxide, deterioration of the ozone layer, acid rain, nuclear pollution due to radioactive waste, the destruction of forests, etc.

The resources of our planet are limited and relatively bounded in space, although they are, to a large extent, renewable. It may therefore be important to improve the recycling of raw materials without damaging the ecological balance and equilibrium.

The application and use of scientific knowledge has made for the creation of more precise and sophisticated technological instruments, which in turn has provided science with more vigorous and useful machines and tools for advancing scientific knowledge. Economic, political and social interests, needs and motives seem undoubtedly to have played an important role in advancing scientific and technological progress and their uses and applications as a means of societal development. As a result, we are witnessing newly emerging branches of science and their applied fields, such as biotechnology, cybernetics, electronics and various types of new information technologies.

Science and technology can indeed affect our lives either negatively or positively, depending how the individual or society uses its products and results; influence our way of thinking, attitudes, careers and life styles; and, more crucially, they possess the power to either wipe out civilization as a whole or sustain its survival.

a) What can scientific orientation offer to education? Which aspects of scientific thinking and attitudes are beneficial to the education process?

b) How could education prepare itself to cope with rapid and unpredictable scientific and technological developments? What is the role of non-formal and informal education in this respect?

c) What are the possible contributions of social and natural sciences to enhancing the quality of the teaching and learning processes? How could educational technology aid this process?

d) How could education contribute to understanding man in relation to his/her natural and man-made environments? How should the content of general education be organized in this respect?

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(e) a recommitment to the goal that education must be for all and not just for some.

(f) a commitment to learning how to learn, and to develop a love of learning, in order to provide the basic building blocks for lifelong learning. This involves the development of the ability to critically assess one's own learning.

(g) a third "passport" of learning, namely, the enterprise passport. This involves elevating enterprise education to the status currently enjoyed by the academic and vocational education passports. Enterprise education involves nourishing the capabilities of thinking, planning, co-operating, communicating, organizing, solving problems, monitoring, and assessing.

(h) an emphasis on personal development, self-awareness and esteem, and confidence, in order to deal with a rapidly changing world. The development of a positive outlook to the future so that we will be empowered to create a preferred future.

(i) a commitment to promoting interpersonal development, supporting the ability of young people to develop relationships with others. The promotion of tolerance, and respect for different views and perspectives, cultures, religions and races, and towards the opposite sex, and to disabled people.

While maintaining cultural identity and values, a philosophical approach to education for the twenty-first century will need to emphasize a commitment to co-operative globalism. This will be an outcome of developing cultures with greater caring capabilities. Indeed, we need to create a new paradigm for co-operative globalism. The creation of such a paradigm is an urgent task. Both economic and ecological forces are driving the world in this direction. Even though there are increased signs of nationalist intolerance appearing around the globe, the forces driving globalism should prevail over such divisions. It should be a task of the education systems of the world to ensure that, indeed, this actually happens. One of the issues which needs to be addressed is the development of an international language for such a global society, which reinforces and promotes an international culture. This should be a topic for future specific work by Unesco.

A new education system appropriate for the twenty-first century will need to address the economic and political system in which such an education system is sited. Recent times have seen the decline of the post Keynesian approach to the Welfare State, which, while providing increased equity, actually leads to increasing dependency and passiveness among the disadvantaged. A newer neo-conservative approach has replaced it, emphasizing individual gratification over that of the society as a whole. This has lead to increased disrespect for disadvantaged groups, and to increased division between rich and poor. We need a new approach based on care for all and which emphasizes the realisation of social justice goals through the empowerment of disadvantaged people to enable them to actively seek solutions to their economic problems, through enterprising and innovative behaviour.

2. RUSHING TOWARDS A GLOBAL SOCIETY

Globalisation has been under way for some decades. It has been largely driven by forces of economic rationalism. A major product of these changes will be the formation of a single economic unit in Europe in 1992. In addition, however, ecological forces have generated considerable global fear that our fundamental life-support systems are in danger. The 1987 report of the World Commission on Environment and Development, "Our Common Future", (the Brundtland Report) has given the earth a new agenda for action. We need to create an ecologically sustainable world within a generation at the outside. By the year 2010 our agriculture, fisheries and forestry, and indeed all forms of development need to become sustainable. Even though we do not know what this sustainability will precisely look like, we need to commit ourselves to realizing it. This will require many changes, including new forms of land management, the creation of new products, services and technologies, new

a) What is the role and importance of communication in the educational process in order to improve the quality of education? In this respect, what communication, between whom, concerns education?

b) How could educational goals and objectives be linked with more specific teaching or learning objectives?

c) How could education better identify educational use of media in diversified educational settings to improve its qualitative dimensions? How should the learner be taught to find and select appropriate information and to critically assess and use it for a clearly defined purpose?

d) What would be the potential contributions and constraints of information technologies vis-à-vis enhancing the quality of the educational process, particularly in terms of teaching methods, organizing learning experiences, learning processes and motivation, evaluation, and so on?

e) What are the training implications of information and communication technologies? What are the future training requirements and prerequisites for the learner and the teacher to, for instance, enable them to choose and specify what technology they want and adapt the technology systems to their needs? In other words, what human factor should education emphasize in identifying the optimal utilization of information and information media technologies, which present a considerable potential and a variety of options for improving education in the future?

4. The world of work and education

The future world of work will be packed with more and more information, intensive and high-technology oriented, in industrialized countries. Substantial industrialization efforts and greater use and adaptation of technological means for national development are predicted in developing countries.

There will be an increasing number of new branches and developmental research projects in such fields as biotechnology, telecommunications, new materials and laser industries, and so on, which will require highly technical skills, knowledge and training. The habit of hard work will not suffice; more effective, imaginative and creative work will be needed.

As automation and informatization of the work process increase, routine, repetitive and dangerous work will be done by machines. Workers may be encouraged to participate more in decision-making as new and more diversified functions, skills and work organizations emerge. Working conditions will need to be improved so that workers can have a comfortable, clean and pleasant workplace. More active participation and shared responsibilities and individual initiatives on the part of workers will require a decentralized, less hierarchical organization of work.

There will be more leisure, which may compel people to think about what activities they should engage in when they are not on duty (including non-paid work, voluntary services, etc.). Working hours may be more flexible to obtain more part time and temporary work forces. As information technologies produce more mobile and portable machines, the number of people working at home or working outside their workplace may increase. The individual's capacity for gathering information will increase remarkably as facsimile, telex, electronic mail services and data networks become more extensive.

Unemployment may persist due to structural shifts in industry, the replacement of certain human labour by machines and the need for shifting from one job to another. New technologies will, however, also create new jobs for those with adequate training.

Community involvement in education is expected to increase, as education may need the increasing cooperation and expertise of industry and of professional organizations to keep pace with the technological and socio-economic development of society and to produce properly trained personnel who can cope effectively with these developments.

a) What are the qualities required of education in order to cope with the future world of work, characterized by rapid change and complexity and intensively technology and information orientated?

b) How should education organize its content, methods and training in order to increase the relevance and quality of the education process for meeting future career and occupational challenges?

c) What qualifications, skills and attitudes are needed by young people before entering the world of work and for their retraining and continuing education.

d) What could be the role of education in coping with increased leisure time and with the continued threat of unemployment?

e) What would be the perspective for a more dynamic and mutually beneficial relationship between education and industry, particularly with a view to innovating and vitalizing the educational process and to meeting better manpower requirements?

IV EXPECTED FOLLOW-UP

The results of the Symposium and Round Table will be taken into consideration in the implementation of Unesco's programme under the Third Medium-Term Plan (1990-95), particularly in Major programme Area I, Education and the Future, after its adopted by the twenty-fifth session of the Unesco General Conference (October-November 1989).

Contained in this Major Programme Area is Programme I.2 Education for the Twenty-First Century. The results of the meeting will be fully examined and utilized when executing activities particularly related to the humanistic, cultural and international dimensions of education, the quality of life, the world of work and the promotion of science and technology education.

FINAL REPORT

Distribution: limited

ED-89/CONF.810/5
Paris, 15 December 1989
Original. English

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

International Symposium and Round Table

QUALITIES REQUIRED OF EDUCATION TODAY TO MEET FORESEEABLE DEMANDS IN THE TWENTY-FIRST CENTURY

(Beijing, People's Republic of China, 27 November - 2 December 1989)

FINAL REPORT

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I. INTRODUCTION

A. Background and Objectives

1. Background

1. In conformity with the decisions taken at the twenty-fourth General Conference, Unesco organized from 28 November - 2 December 1989 in Beijing, People's Republic of China, an International Symposium and Round Table on the theme "Qualities Required of Education Today to Meet Foreseeable Demands in the Twenty-First Century".

2. The decision was taken in response to world-wide debates intensified among Member States on the re-orientation and vitalization of education with a view to preparing young people for the twenty-first century, in order for them to effectively meet challenges of the new century in a world even more complex and interdependent and facing rapid scientific and technological innovation, an ever increasing production of information and knowledge and serious deterioration of the environment.

3. For the last four decades, Unesco has played a leading role in stimulating and promoting the reflections and debates on the future of education. The report "Learning to be" (1972) by the International Commission on the Development of Education exerted a world-wide debate on educational philosophy and practices and its basic concepts of lifelong education and of a learning society have been widely recognized and put into practice. In 1980 Unesco organized an International Symposium on the Evolution of the Content of General Education Over the Next Two Decades, which invited education specialists from all regions of the world in order to debate the essential features of the organization of educational contents, such as the relevance of educational contents, its balance and interdisciplinarity. Moreover, Unesco has recently carried out international comparative studies on the trends and innovations of curriculum reforms, the synthetic results of which were published in a book "The Contents of Education: A World View of their Development from the Present to the Year 2000" (1987).

2. Objectives of the Symposium and Round Table

The main objectives of the Round Table were to propose major long-term goals and orientation of education from a multidisciplinary point of view, and to identify its more dynamic roles in order to prepare young people to effectively meet the challenges and foreseeable socio-economic, socio-cultural and scientific and technological developments in the twenty-first century.

Given the role of education to help young people for life in the twenty-first century, the main objectives of the Symposium was to identify and clarify more specific qualitative dimensions required in vitalizing and renovating education, covering educational implications of ethical and moral issues, science and technological developments, communication and information and communication technology and the challenge of the future in the world of work.

3. Expected follow-up

The results of the Symposium and Round Table will be widely disseminated to Member States and to all those concerned in order to stimulate debates and discussions on the future of education towards the twenty-first century.

The International Symposium and Round Table will serve as a starting point for other Unesco programmes and activities which are expected to examine various dimensions and aspects of the quality and future of education.

It will also be followed by a series of meetings in the next few years, whose main concern will also be the quality of education.

The International Congress: Planning and Management of Educational Development (March 1990, Mexico) and the World Conference on Education for All - Meeting Basic Learning Needs, to be held in 1990, will deal with providing good quality primary schooling for all children around the world and literacy linked with life skills for adults to enable them to cope with the demands of the modern world. The special theme of the 42nd session of the International Conference on Education (ICE) will be literacy education, as a contribution to the International Literacy Year (1990). Two regional Conferences of Ministers of Education and those Responsible for Economic Planning in Africa (MINEDAF) and in the Arab States (MINEDARAB), and the fourth session of the Intergovernmental Regional Committee for the Major Project in the Field of Education in Latin America and the Caribbean (PROMEDLAC) will also be held during 1990-1991.

The results of the Symposium and Round Table will be taken into consideration in the implementation of Unesco's programme under the Third Medium-Term Plan (1990-1995), particularly in Major Programme Area I, Education and the Future, after its adoption by the twenty-fifth session of the Unesco General Conference (October-November 1989), particularly in its Programme I.2, Education for the Twenty-First Century. The results of the meeting will be fully examined and utilized when executing activities particularly related to the humanistic, cultural and international dimensions of education, the quality of life, the world of work and the promotion of science and technology education.

The overall results of these meetings and activities in this field are to stimulate the reflection of Member States and their institutions on the future of education when devising plans and strategies for renovating the education systems and practices in the years to come.

LEARNING TO CARE: EDUCATION FOR THE TWENTY-FIRST CENTURY

REPORT OF THE ROUND TABLE

INTRODUCTION

In the 1890s a phenomenon called "end of century thinking" commenced. People started to think, write, and talk about the nature of the coming twentieth century. In the last two months of the 1980s, and as the world enters the 1990s, our thoughts will likewise go forward towards the twenty-first century. We should now begin to articulate the kind of world we would like to create in the twenty-first century, and to set about creating as much of it as we can. While there are many aspects of the future we cannot predict, there is still much of it we can realise, if we seek to do so.

All too often in the past, education systems throughout the world have been followers of trends, rather than creators of them. Now education must lead rather than respond to change, and play a major role in helping to mould a preferred twenty-first century.

The world has never changed so rapidly. Beginning in the 1950s a series of technological revolutions commenced. Three of these now exist. These are based on the technologies of the silicon chip which has generated the information revolution, the manipulation of the DNA molecule which has created the biotechnology revolution, and the creation of new advanced industrial materials. There is no reason not to think that these three will not be joined by others in the 1990s.

On the threshold of the twenty-first century, we are more aware than ever that our intellectual achievements and the education systems which support them are interdependent. An education system which is not protected and nurtured by society, will fail to protect and nurture society itself.

Increasingly, wealth and prosperity are dependent on knowledge and skill. Developed countries have never been so creative and innovative. They are deluging the world with new products and services based on their brain-power and creativity. Their economic prosperity is based on the utilisation of intellectual property and resources in the arts, the sciences and the technologies, and through the development of highly skilled and continually learning workforces. These countries now recognise that investment in the education of their people is the best way to ensure greater economic prosperity in the future.

Increasingly other countries are following the same development model. In this model, economic success will be achieved by countries which develop systems of lifelong education, combined with career-path planning. The desire of developing countries to purchase significant quantities of advanced technology-based products and services from developed countries has been a significant cause of their increased indebtedness. Many of these countries now also realise that they too must join the knowledge-based industrial world if they are to thrive economically. Therefore the education systems of all countries have never been more critical for their economic prosperity.

The world is becoming smaller. It is partly being caused by increased trade interdependence and internationalisation of individual economies. New regional groups with common economic arrangements are being formed. This regionalisation is being driven by economic forces and by increased interaction of patterns of trade, investment and tourism, and by the transfer of technology.

The world is also facing a new series of threats. It is now recognising that it is now facing some serious ecological problems, which could seriously risk survival on the earth as we know it. Issues such as climatic change, ozone depletion, acid rain, radio-isotope contamination from nuclear power plants, water pollution, land degradation, the rapid extinction of plant and animal species, and forest depletion are all forcing us to begin to review the very ways we conduct life on the earth. World population is increasing at alarming rates, while urbanisation and related patterns of social disintegration are threatening the economies and societies of third-world countries.

Still there are reasons to hope that things can be better. The unexpected end of the Cold War between East and West is leading to the possibility that the 1990s could be a decade of increased co-operation and demilitarisation. There exists the possibility of directing the resources now devoted to military budgets in the 1990s to deal with other pressing global issues, including third-world debt, population management, preventing international drug smuggling, increasing world literacy, and dealing with urgent environmental problems. There are reasons to be hopeful. However, this opportunity which is at hand, may be the last chance we have to find meaningful solutions.

The basic issues relating to equity in the world still remain. Disparities in economic prosperity continue to widen between rich and poor nations, human rights continue to be abused, and in some cases even advancements gained in the 1970s have been lost in the 1980s. Two examples of these lost gains relate to the achievement of improvements in global literacy, and continued improvements in the rights and status of women. We therefore must rededicate ourselves to utilizing the education systems of the world to maximise the opportunities of economically disadvantaged individuals, groups, and nations for improving their relative socio economic positions.

Education planners now need to address these and other issues. They need to restructure education to fit people for the twenty-first century, which now will probably be rather different to what we would have predicted as recently as five years ago.

We now need to describe some of the aspects we envisage for a desirable education system which will better fit all people, not just some people, to be active participants in creating a more equitable, fairer and more liveable world in the twenty-first century.

These problems will only be addressed if we become more caring. We need to pay attention to many aspects of caring including:

- Caring for oneself, including one's health.
- Caring for one's family, friends, and peers.
- Caring for other people.
- Caring for the social, economic and ecological welfare of one's society and nation.
- Caring for human rights.
- Caring for other species.
- Caring for the liveability of the earth.
- Caring for truth, knowledge, and learning.

The drive towards industrialisation has led to the end of the extended family in many parts of the world. In many places now,the nuclear family is also under threat. Many people increasingly appear to be motivated by individual advancement at the expense of others, they

are increasingly showing less interest in the acceptance of responsibility for the welfare of, and in giving service to the community at large. A return to some of the values of caring, characteristic of earlier times, is needed. Many indigenous cultures have values and myths which promote caring, including caring for the earth which has nourished them. We could do well to learn more from these cultures which have lost so much because of the lack of caring and respect which conquerors from other cultures have had for them. The remainder of this report will address some of these issues, including those associated with creating a more caring humanity in the twenty first century.

In addressing these problems we will consider three basic subject areas.

1. A PHILOSOPHY OF EDUCATION FOR THE TWENTY-FIRST CENTURY

We need a new philosophy of education appropriate for the twenty-first century. This will include a new epistemology of knowledge and learning, a new code of ethics appropriate for the twenty-first century, and a new political and economic approach in which to site education for the twenty-first century.

The new epistemology of knowledge and learning needs to include:

(a) a new view of knowledge. Education systems throughout the world have emphasized the view of knowledge, which is rationalist. Intuitive approaches have been largely ignored. In addition, traditional approaches to knowledge, which are characteristic of other cultures, have been neglected. Just as the West is rediscovering non-Western approaches, these same values often continue to be degraded in the developing countries in which they originated. We must take a much more multi-cultural view of knowledge. The world has increasingly become enraptured by the logical and positivist approach of science. Truth is often now defined in terms of verifiable scientific truth. This has lead to a downgrading of respect for systems of knowledge which are not based on the dominant Western scientific approach. The education system needs to promote areas of knowledge which are derived from other approaches, but which have also been of undeniable benefit to humanity.

(b) a greater integration of knowledge. Our education system has suffered from the increased fragmentation of knowledge into often meaningless and irrelevant units. We need a new approach to knowledge which is more integrated. This integrated approach can probably best be realised by focussing knowledge on seeking the solutions to real problems which face us at all levels from the local to the global.

(c) a renewed commitment to lifelong learning, combined where possible with career-path planning.

(d) an education system with the following shifts of emphasis:

- A change from education for conformity, to education to promote creativity and innovativeness.
- A change from promoting competitiveness, to promoting co-operativeness. This is part of the agenda for increasing caring.
- A change from a national or parochial viewpoint and loyalty, to that of a global viewpoint and loyalty.
- A change from emphasizing the private benefits of learning, to emphasizing the public benefits of learning. We need to develop a sense of service and to stress community benefit and the advancement of public good.

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e) What is the role of general education in relating science and technology to socio-cultural aspects of the life of the individual? What can education do to create greater awareness of the social, ethical and humanistic values science and technology can serve?

3. The educational implications of communication and the impact of communication and information technology

As is the case with many human activities, education is impossible without some form of communication, verbal, non-verbal or paralinguistic. Education, as proposed by a traditional model of communication, involves the originator of the message (teacher), the message itself (teacher's verbal instruction) and the recipient of the message (learner). Educational activities also encompass different contexts of communication - interpersonal, small group or mass.

Mass media enables the learner to expand his or her learning beyond a formal school situation. How much do we learn from television, films, newspapers and magazines? A substantial amount of information is transmitted by the media. While recognizing the advantages of the mass media, concern has been expressed over the possible misuse, exploitation and manipulation of the media messages or information by senders. On the other hand, the freedom of the mass media along with the free choice of mass media information by individuals have been voiced. The debate on the use of mass media in educational and non-educational sectors of society seems set to continue into the future as a larger segment of population becomes recipients and media's technological sophistication continues to grow.

The role of information and information technology is receiving worldwide attention and creating debate, in particular on possible uses and applications in almost all sectors of society.

Unesco organized an International Congress on Education and Informatics (Paris, April 1989) which produced a series of conclusions and recommendations. The degree of flexibility of educational structures needed for the introduction of new information technologies, the availability of sufficient financial resources and adequate infrastructures for the operation and maintenance of these technologies, properly trained personnel (including teachers) and effective educational software were identified among others as possible determinants of successful endeavours in this field. The need to reduce the gap in terms of hardware and software availability, financing, training and research between developed and developing countries was stressed. The socio-cultural consequences and effects of a new information age received considerable attention. Education's role in interfacing with industry and as a major participant in industrial training activities was stressed. The meeting recommended further exploration into more dynamic relationships between education and industry.

The advantages of new information technologies have been well recognized in the fields of industrial and business management, communication industries, financial services and transactions, data processing industries, medical industries, and so on. However, knowledge concerning their educational use and applications seems to lag behind. Education is a complicated interactive process between various categories of people and between different levels and types of education systems, often confronted with long-term goals and developmental tasks of fostering skills, values and attitudes and the dynamics of teaching and learning.

Nonetheless, how education places, handles and identifies effective and rational uses and applications of information and communication technology may considerably affect the future course of education.

forms of consumer behaviour, and the addressing in particular of third-world debt problems so that developing countries will be able to afford to be part of the solution rather than part of the problem. The education system needs to address the fundamental issue of creating sustainable development. This is a positive way of dealing with a series of problems which are usually portrayed in a disempowering and negative way. We need to be able to understand the nature of the issues through scientific and other forms of knowledge, but we should also develop a commitment to caring for the earth, and to regard ourselves as integral parts of the environment and not separate from it. In the twenty-first century, people will need to give their first loyalty to the ecological environment of the planet. Unesco will need to address in detail this new agenda.

Among the issues which need to be addressed is a commitment of all people towards solving these problems in a co-operative and equitable way. This means that developed countries will need to provide developing countries and disadvantaged indigenous peoples everywhere with considerably greater levels of financial and technical assistance. People will need to care more for this to happen. In addition, people will need to recognise that other species on the earth have a right to exist, and that the solution of human problems should not be gained by sacrificing other species.

3. DEVELOPING A NEW VIEW OF LEARNING FOR THE TWENTY-FIRST CENTURY

The system of institutions which will engender the most appropriate learning for the twenty-first century will need to be quite different from present models. Possibly the most important ingredient will be the increased involvement of the community in schooling, and an increased involvement of the school in the community.

As learning will be a lifelong process we need to better use all learning opportunities. Learning within the family context, from peers, from the community including via the media, and by other means, are every bit as important as learning engendered by the school. Increasingly, learning is done outside the school.

Learning also needs to be increasingly learner-initiated and learner-driven. Educational technology is providing new opportunities for high quality interactive learner-driven learning. We can expect this to increase dramatically in the 1990s. Indeed, because of advances in educational technology, it is now possible to be a lifelong learner even if one is illiterate.

The traditional view of education has been based on a view of learning, where teachers and texts are the source of knowledge and students the passive recipients. The enterprise educational passport requires active participation by the learner. Another way of expressing this view is that learning must be based on the traditional curiosity, activity and innovativeness of early childhood.

Learning should be an interactive process based on initiating motivated learners. This requires an active learning process, involving organizing knowledge, integrating this with what one already knows, and using this knowledge in solving real problems. In short, learning should be focussed on what learners can do, rather than what they know. Learning should be an empowering process, and lead to positive action, and to creating a preferred future.

To encourage such interactive learning, learning environments need to be restructured so as to encourage and include:

- Respecting what the student brings as a resource to the learning situation
- Student goal-setting

- Problem-oriented learning
- Learning to be enterprising
- Learning to be collaborative
- Widespread use of educational technologies utilising interactive learning
- Teachers playing the role of the facilitators of learning instead of being sources of knowledge

Learners need to become anticipatory in dealing with future issues, and to be able to develop visions so they can set out desirable goals for themselves and for society. A learning society, full of learning organizations and individuals, will be both anticipatory and participatory.

The requirement for lifelong learning and education will mean that education systems will need to find new partners in the education process. No longer can schools be places where students are prepared for everything in life. Indeed, lifelong education means that schools can be relieved of the onerous duty of programming people for life. The old division of lives into three parts, namely, schooling, work and retirement is disappearing. In the future education, work and leisure will occupy the whole of life and only change in their relative proportions. School now needs to engender enthusiasm for learning, and to give students the tools to become lifelong learners. Provided society offers many opportunities for learning in later life, people will be able to acquire the knowledge and skill needed for living and adapting in a rapidly changing and complex world. In such an educational system, technological redundancy should become a thing of the past. Even the disappearance of whole job categories, and the creation of new ones should not be a major threat.

The new partners that the education systems should seek include the following:

(a) The development of national approaches which recognize the educating role of parents in early childhood, and which allow parents to continue their involvement by actively participating in the early years of schooling. This should allow additional resources to be provided in the school system and will result in the development of co-operative arrangements for the promotion of appropriate social attitudes in the young.

(b) An increased integration between the school and the world of work. Students should become involved from an early age in the world of work. This will require new forms of co-operation between employers and the world of work on the one hand, and the education system on the other. It is important to recognize that the future world of work might differ dramatically from the present world of work. Indeed, educational planners should seek to encourage associations with work places which are likely to be characteristic of future work arrangements, rather than present ones.

(c) A more coordinated approach between the print and electronic media and educational institutions to the promotion of learning. The media already is a major promoter of learning, a great deal of which is in some countries, probably undesirable and threatening to longer-term human welfare. The media needs to assume greater responsibility for its role in the learning process, even this will to some extent conflict with current concepts relating to freedom of the press. Educators need to fully recognize the potential role that the mass media can play in public education, and should seek to integrate their educational programmes, where possible, with media organizations and their programmes.

LEARNING TO CARE: EDUCATION FOR THE TWENTY-FIRST CENTURY

REPORT OF THE SYMPOSIUM

"The future is not some place we are going to, it is one we are creating. The paths to it are not found but made, and the making of those pathways changes both the maker and the destination" (Anon)

The discussion in the Round Table painted a view of the future which needs to be taken into account in making decisions about education for the twenty first century. It is a future with a range of challenges including the ecological problems facing the world, the world population growth, and the growing economic divide between rich and poor nations. At the same time, there are reasons for hope. The policy of demilitarization currently just beginning could enable investments to be channelled into meeting basic human needs, dealing with urgent environmental problems and reducing the debt of poorer countries. Furthermore, there are major technological changes which, if managed appropriately, have great potential for wealth creation around the world.

This report will consider the implications for education for the twenty-first century which takes these challenges into account. In setting forth these implications, the Symposium's perspective was that of the learning capacity of societies in its broadest sense. That will require that almost every societal institution consider its responsibility and role in the learning process. This requires also that, using a systems approach, there will need to be many more collaborative partnerships in order to broaden, enhance and accelerate learning. Those directly responsible for educational planning and administration as well as teachers should regard themselves as animators and coordinators of such partnerships. This will strengthen the human capacity to master the processes of change for the better destiny of humankind.

CULTURAL, MORAL AND ETHICAL ISSUES

What are the distinctive cultural, moral and ethical issues which this new scenario will require us to consider?

(a) Hopefully, further reduction of arms will continue. (Moreover, nations not involved in the major blocks also need to be willing to divert resources from military budgets to meeting basic human needs and to safeguard peace). All countries may need to consider what effective peace education would be for children and young people in schools, non-formal, informal, and lifelong education.

(b) The current trends towards democratization in the world will hopefully promote better understanding between nations. In order to support such a change we will need an education which enables us to live in a plural world, both between countries and within countries, with mutual understanding and respect. We will be living in a plural and highly interactive society and it will be important to acknowledge and respect the views of others different to our own.

(c) The global problems we face with the environment will require a new ethic of responsibility and trusteeship for life, now and in the future. Rather than controlling the environment, we will have to learn to live in harmony with it as an integral part.

(d) Human rights and dignity must still be an issue at the forefront of our concerns but will need to be extended so as to encompass a wider ethic requiring respect for all life forms.

(e) The technological developments taking place in many parts of the world are producing changes in people's work and living conditions. In the developing countries they have lead to materialistic tendencies and the erosion of traditional cultural values. Within the developed countries, this has produced an increase in material prosperity, but is bringing some negative effects in terms of the cohesion of the society. Prosperity does not necessarily lead to an improved quality of life. The new technologies are also generating new ethical challenges and dilemmas (e.g. new reproductive technology) which will require careful consideration.

(f) The gap between rich and poor nations is increasing. It will be necessary for the richer nations to realize the threat that such a divide will pose to stability in the future and appreciate the need to redress the balance.

(g) While it was accepted by participants that a goal of education is to enhance young people's love of their country, this is not to be interpreted as the same as teaching an unquestioning support for a particular social system.

What implications does this have for education?

A Convention on the Rights of the Child was adopted by the United Nations in November 1989. In all societies the right of the child to education, health, shelter, care and protection against all forms of abuse and exploitation needs to be kept to the fore. In considering children's moral and ethical development, it is necessary to reflect on the way that we as humans develop attitudes to ourselves and to the world around us. We know that it is important for a child to establish a positive attitude to itself and its place in the world during the early years of life in order to develop a positive self-concept; positive relationships with carers during this period are very important.

Along with the emergence of self-concept, basic attitudes such as trust, hope, love, respect, optimism, nutured during infancy, may also lay the foundation for personality development essential for later stages in life and important for the establishment of caring attitudes for others.

The development of self-esteem is important before children can venture into the world with confidence and develop a caring attitudes to others. A positive self-image is important for moral development and ethical development. School alone cannot influence moral/ethical development. The family must be involved as well as society. In the family situation the basic building blocks for a caring character are formed. These include trust, hope, love, respect, and optimism. In present day societies, with their emphasis on scientific rationality and exploitation of the world, there is a tendency for people to enhance their sense of self through competition with others. In a world where mutual respect and co operation is essential, it will be important to develop environments, at home, school and in wider society, in which young people's self-esteem is enhanced through supporting and co operating with others rather than through competition.

Directions which will be helpful to implement this may include:

(a) Support by society for the carers of children and counselling during their early years. This may include parent education and enabling parents or those with the primary care for young children to have adequate time to spend building sound relationships with them.

(b) In societies where parents, due to work obligations, have less time at home, schools are being expected to shoulder the responsibility for children's moral development. However, development of this kind occurs through experience within an environment and formal teaching cannot succeed by itself. There will need to be a partnership with other agencies in society including politicians and the media to address this issue.

(c) Schools, as social institutions, may need to rethink the way they are structured. At present they tend to be based on a nineteenth century hierarchical scientific management model: the superintendent is the manager, the teacher is the worker and the student is the product. Other organizational models for schools may need to be considered if students' development as whole persons is to be enhanced. Rather than considering how to prepare young people for the future, we need to think about preparing for the future with the help of young people through their active participation in and involvement with constructive and co-operative educational environments.

(d) In the classroom a "pedagogy of democratic fellowship" can be created in which children collaborate and support each other in their learning. Such classrooms can be mini social realities in which students assume different roles including those of leadership. Teachers are facilitators, organizers and managers of the learning - in this way, they focus not so much on what they are to teach but on supporting their students' learning. In this way, values are imparted through action and interpersonal behaviour in the classroom.

(e) For adults, there are many conflicts, tensions, contradictions and double standards in their lives. There is thus a role for adult education which will emphasize value clarification, problem solving, and address the conflicting issues in their life. Non-formal education can complement and enhance the formal system in this case.

SCIENCE AND TECHNOLOGY

The society of the twenty-first century will require a scientific and technological base among its citizens but questions need to be asked about what kind of science and what kind of technology education will be needed.

Furthermore, art and design is also being seen as having an important place along side science and technology education in the future. Not only do all three activities require creative qualities but art and design have an important contribution to make along with science in the development of technological products.

In many school science programmes, the rationalist view has portrayed science as embodying objective truth and as value free. This view of science is now being criticized. Science is now being recognized as a human pursuit and an integral part of each culture. It requires creativity in the generation of ideas and ingenuity in testing and evaluating them. Furthermore, scientific theories have changed and evolved over the centuries and they are likely to continue to do so in the future. In reflecting this more humanistic view of science in teaching, it is important to portray the controversies, conflicts and social contexts which determine how ideas have become accepted. In this way, students may better appreciate the status of scientific ideas and understand the way science itself proceeds.

A number of issues for the teaching and learning of science will need consideration:

(a) All students at school should have exposure to science education. However, school science is often divorced from people's everyday understandings. As a result, what is learnt in school is forgotten once examinations have been taken - the learning does not carry over to people's daily lives. If the contexts chosen for science work can

draw more on people's daily life experience and their own ideas, then it is more likely that this gap can be bridged. Teaching the science involved in the working of everyday devices, such as farm tools, may be helpful in this respect as well as not requiring expensive laboratory provision. However, low-cost science equipment will still be required to meet the needs of developing countries.

(b) In school science courses more emphasis will need to be placed on science as enquiry, as an exciting way of finding out about the world, rather than as a body of knowledge. We need to teach less but teach it more effectively. The local environment should become the laboratory of education, not only in the study of science, but in other areas, such as history and the social sciences.

(c) Science courses should give students the opportunity to consider the social, economic and ecological impact of scientific and technological innovations.

(d) Environmental science will have an important place in helping young people appreciate the interdependence of living things and the fragile balances in the biosphere. For this locally based case studies would be appropriate and are most likely to stimulate the interest of students.

(e) The flavour of science as a human pursuit can be given through students' own enquiries. By developing testing and comparing ideas within a group, students can realize that others may have different ideas to their own and can appreciate the way science itself proceeds. Studies of the way scientific ideas have changed over the times, how different societies have developed different theories, and how scientific controversies have occurred may help students to further appreciate the tentative nature of scientific knowledge.

(f) Equality of opportunity is central to our concerns. It is well known that in most countries present curricula and teaching methods result in girls achieving less well on physical science courses than boys. The orientation towards the science taught, the way it is presented and the methods of teaching will need to be reviewed to address this problem. The teaching of science to girls as well as boys should be seen in the context of career guidance and counselling in order that equality of opportunity between men and women can be realized in education and training.

(g) In many countries the quality of science taught at the primary level is poor. This is largely due to the low level of scientific education of teachers. This is a long-term problem and needs to be addressed by specific programmes.

Our view of technology may also require reframing. There is a tendency for technologies to be viewed as ways of exploiting and controlling the environment to specific ends. In the future, technologies will continue to need to be developed which meet basic human needs in ways which are appropriate to each culture. Now, with our recognition of factors such as the limited physical resources of the earth and the delicate balance that needs to be maintained in the biosphere, we can no longer afford to neglect the various side effects that a technological innovation may have. There will always be costs as well as benefits to be considered as a result of any new technological innovation. Additionally, the role of technology in helping to solve environmental problems needs to be studied.

In a sustainable world there will be need for technological developments and enterprise, not only of a high technology nature, but low-cost intermediate technologies will be required. Technology teaching tends to be undervalued compared with science teaching. We suggest that, if we are to develop enterprising students, there may be a case for technology to have a more prominent place in the curriculum.

Technology courses are being implemented in schools in a number of countries. These give students the opportunity to design, construct and evaluate devices or systems which can be

chosen to address needs in the students' own environment. In developing and evaluating products in this way, students can also be given the opportunity to consider the costs and benefits of the innovation and hence see the activity in social and environmental terms.

Such a problem solving approach has particular relevance for some adult education work. For example, in rural communities people may identify and work on a common problem e.g. improving their water storage system or the quality of animal feed.

COMMUNICATION

Communication means by definition to do something together with others. It is a basic human need. Without it we die psychologically as human beings. Language is of course the most powerful form of communication we have. It enables us to not only to communicate with others but to represent our own thoughts to ourselves and so develop and articulate them. Language is not our only means of communication, however - as humans we communicate through gesture, clothes, music and art.

1. Languages and language teaching

A policy for the teaching of languages is needed both to enable people with different mother tongues within a country to communicate and participate in that society and to provide for foreign language teaching to be a high priority in the progressively interconnected world of the twenty-first century. A case for a world language was considered at the symposium, and it was recognized that, with mass communications now operating on a global scale, there is a real possibility of the English language becoming progressively dominant. However, the importance of preserving the rich cultural heritages embodied in the world's variety of languages was recognized as being essential.

In considering language education for the twenty-first century the following points were made:

(a) Mother tongue, or the language of the home should be used in the beginning years of schooling where possible. Reading and writing skills in the mother tongue can later be built on in the context of lifelong education. However, countries will need to decide their own language policies in conformity with their national objectives.

(b) Foreign languages in schools will require greater attention. This can be provided by teaching entire school subjects in the foreign language and by developing bilingual or total emersion schools. Teachers also need to be knowledgeable about different cultures and cultural implications in addition to the language itself.

(c) There may need to be different foreign language programmes for groups with different needs e.g. foreign language suitable for skilled workers in a mobile workforce or for academics in specific disciplines.

(d) Systems should be considered in which language minorities can profit educationally from knowing another language rather than being penalized as at present tends to happen within centralized education systems.

(e) The variety of languages taught in schools may need to increase with for example the inclusion of major oriental languages to enhance intercontinental communication.

(f) Exchanges of both pupils and teachers between countries could greatly benefit foreign language programmes.

(g) Artificial languages including computer programming need to be considered within a language policy.

2. Communication within the learning process

Technical developments in the communication area have made enormous progress in the last decades. From a psychological point of view, personal communication, that is direct interaction with the teacher, has proved to be the most efficient educationally. We cannot and should not replace the teacher. However, we can and must improve the quality of teaching. Attention must be paid to teacher training programmes to adapt them to an ever-changing society. Teachers also need an increased understanding of their role by the public.

The quality of education depends partly on the quality of communication in a social network; teacher-student, teacher-family, teacher-peers, teacher-communities. We have a body of knowledge now regarding the "communication chain" (sender, message, receiver) but, in order to create a more caring society in the future, we need to increase our knowledge of the psychology of the receiver. We need to know how we are perceived as senders as well as how our message is received and interpreted. We know that men and women may communicate differently and "male language" and "female language" may be characterized by a variety of aspects. Communication in different cultures varies as in different subcultures within the very same country.

Teachers need a increased knowledge about communication and human relationships in their teacher training programmes. A teacher's professional attitude contains at least three essential ingredients: knowledge, self-awareness and empathy. The latter two are most difficult to implement in a teacher training programme; they cannot be taught, only experienced and communicated through, for example, supervision.

Increased communication is needed between teacher, other professional personnel in the school and peer groups. Social learning (human relationship skills, values, attitudes, etc.) can be stimulated and facilitated in peer groups, provided that teachers and other professionals can offer support and supervision.

Educational evaluation is also part of a communication process. Evaluation of educational programmes and students' learning outcomes is necessary to provide information and feedback in order to guide decision making in educational administration and instruction. Any evaluation study needs to consider what it is that is to be evaluated, how it should be evaluated, who should be involved in the evaluation, and who requires the information. It is recognized that the type of assessments used in schools have a strong influence on what students see as being important to learn. If we are to promote a greater emphasis on encouraging the students to become active learners, to be enterprising and inventive problem-solvers, then this will require a major shift away from the assessment of memorized facts towards the assessment of processes. The development of appropriate assessment procedures will need to be an important priority.

3. Information technology and new communications systems

New developments in information technology, including computer aided learning, interactive video, video and television, offer important opportunities to improve the quality of learning for many students. Developments in this area, however, require a large investment of effort and finance. In many developing countries the reality is that only a few elite schools would have such technology, thus aggravating the equity problem in developing countries. In order to enable the maximum benefit to be obtained from these developments, the following will need serious consideration:

(a) Research into ways of reducing significantly the costs of necessary equipment.

(b) The setting up of centres, national, regional and global, to produce and evaluate new resources and media and to train trainers in their use.

(c) The provision of satellite channels for use by developing countries for educational television.

(d) The international exchange of educational television programmes.

There is an important role that can be played by international agencies in developing distance learning materials which address global concerns such as pollution, the greenhouse effect, population planning, etc.

The effectiveness of pedagogy based on new information technology has yet to be evaluated. There is a clear need for research to guide innovations and use of this technology both in school and in out-of-school settings.

Distance education will undoubtedly be greatly expanded, especially in developing countries. If this development is to be most effective, it will be necessary to consider the support needed to provide quality programmes and, more importantly, to organize learning experiences through distance education that will involve two-way rather than one-way learning activities.

4. Education and the mass media

A new strategy of education based on innovation should be adopted in all countries; self teaching should be considered an important element in such a strategy. Educators have a part to play in ensuring the flow of relevant information through the media. They may need to assess the access to mass information through various media by different segments of the population and to assess and influence its quality. This may involve:

(a) Contact with groups involved in the field of communication (including the mass media, religious leaders, folk and pop media).

(b) Provision of technical support to improve the quality of information, in particular, giving support to indigenous learning networks on which new activities can be grafted, thus enhancing their role as communication networks for communication and development.

(c) In countries where the media are controlled by commercial interests, governments may need to invest in creating the necessary public service, educational media infrastructure, radio, television, etc.

(d) Encouraging the involvement of people in local programmes, grass roots publications, etc. so that people will not be passive recipients but can generate information and share it with others.

THE WORLD OF WORK

It is difficult to generalize about possible or probable future educational needs for the work force in the twenty-first century.

For example, those needs will differ greatly between rural areas of developing countries and advanced technology areas in the developed countries.

However, it is still possible to propose some likely characteristics of twenty first century work places and the educational qualities which will be needed to effectively work in them.

1. All members of the work force should have access to lifelong learning opportunities, and where possible, career-path planning programmes also. Workers will need to accept responsibility for planning their own workplace education programmes. They will need to be active, flexible and adaptable initiators, rather than passive takers of orders. Loyalty to the work organization will continue to be important. A significant number will also need to be effective entrepreneurs, as a large proportion of workers will need to be able to create their own work opportunities.

2. Rapid technological change will continue, and almost certainly accelerate. There will be large changes in job categories, with possibly fifty percent of job categories changing in one generation. In addition, skills will need to be renewed at the rate of approximately fifty percent every three-five years. Technology will also continue to play a role in broadening the nature of work, requiring increased multiple skilling.

3. Educational services in the work place will continue to receive an increasingly larger proportion of financial resources. The greater the skill level and knowledge required in work, the higher will be the proportion of total resources needed for effective workplace education. In advanced technology areas a significant percent of total resources devoted to workforce education will be common. In rural areas of developing countries, significant workforce education programmes will also be necessary, with an emphasis on technical and management skills.

4. Education for the workplace of the twenty-first century will need to be broadly based during the early years. One way of creating a flexible workforce for the twenty first century will be to continue the broad general education currently characteristic of primary school education in most countries. This should be continued and general education should extend at least into the early years of secondary education. Primary school students need to be introduced to the concepts related to the world of work at an early age so that they can understand the role of work in our socio economic system. The point of time when vocational education should be introduced into the educational system will depend greatly on the stage of development and the economic structure of the country or region involved.

5. Three types of educational requirements should be part of education for the twenty-first century workplace. While the importance of academic and vocational capabilities is well known, this is not true of the enterprise capability. The enterprise skills of thinking, planning, communicating, organizing, problem solving, monitoring, and assessing will all dramatically increase the effectiveness of a worker and the fulfilment he/she derives from work. Indeed the first two capabilities could be of dubious value without the third. Unlike the other two capabilities, the enterprise category needs to be learnt virutally entirely by doing, rather than listening. Therefore, a change in the way learning is achieved will be necessary.

6. Many developing countries need to develop education systems to reinforce rural development programmes. Rural economic development and related education programmes need to be planned together. Rural-urban migration is continuing to increase at a high rate. Educational programmes which are designed to create a stable and developing economic base in rural areas need to be created if this migration tide is to be successfully stemmed. Many developing countries find it difficult to provide sufficient farm lands, jobs and services in rural areas in order to maintain population in those areas, while at the same time attending to the needs of recent urban migrants.

7. Most work places function in a highly competitive environment. Economic success is achieved by work places which maximize internal co-operation, while maximizing the external competitive edge. Co-operativeness in the work place will be an essential ingredient of twenty-first century work places.

8. Some developing countries have introduced a concept of non-military national service. This encourages young people to provide services to their communities and nations at several stages during and after their formal education. This process is also a very effective introduction to the world of work, the development of work ethics and encourages the commitment to public service. Countries which are not yet using such a system may wish to contemplate developing it.

9. Increasingly, work places are being managed in ways which maximize workplace learning. They are being managed so they will finish up with knowledge and skill advantages in future years. Workers are likely to choose workplaces which offer greater learning opportunities rather than greater financial remuneration. Workplaces which offer the best educational learning opportunities will tend to keep the most able and dedicated workers.

10. Ultimately, the most successful worker in the twenty-first century will be the person who has the most balanced personal development, and who is open to new ideas and new opportunities. Any attempt to focus workforce education programmes on narrow work skilling, while they might produce some short term gains, will produce significant structural long term problems. The cost will be an inflexible non-learning labour market, which is highly vulnerable to rapid, unpredictable change.

RECOMMENDATIONS

The Symposium and Round Table requests that:

1. International agencies and associations concerned with education should consider preparing curricula guidelines for those issues which are of global significance. These include:

   - issues relating to the state of the global environment, including the implementation of the report of the World Commission on Environment and Development, "Our Common Future" (The Brundtland Report).

   - Global economic issues such as developing country debt, international drug trafficking, and the development of regional economic arrangements, such as Western Europe post-1992.

2. Unesco and Member States should identify the research areas which have been identified by the Symposium and Round Table as issues related to education for the twenty-first century, and for which further information and analyses are required.

3. Unesco should consider establishing a new international commission on the lines of the Commission "Learning to Be". This new Commission would further develop the work of this Round Table and Symposium, "Learning to Care: Education for the Twenty-First Century".

4. Unesco reaffirm its stated goal of seeking to achieve worldwide and full access to basic education by the Year 2000.

5. Unesco and all Member States work to dramatically improve the employment conditions of teachers, in order to ensure the development of a stable, high quality teaching profession.

6. Unesco and Member States develop appropriate new education methodologies in order to assess the capabilities of actively and interactively learning students, to replace assessment systems based on the memorisation of taught knowledge.

7. Unesco should appeal to Member States to ensure that at least ten percent of revenue redirected from military budgets resulting from the end of the Cold War, and the development of East-West detente, be directed to the education area, especially the promotion of literacy. Developing countries similarly realign their budgets.

8. Unesco and Member States should develop programmes in the education system focused on the maintenance and protection of human rights, so the twenty-first century leaders are more respectful of and more sensitive to this issue than many current leaders.

9. Unesco and Member States should recognize that the development of co-operative regionalism and globalism will still require attention to significant levels of autonomy at the local level. The development of a global society should not undermine maximum possible local management control within the constraints set by the demands of global co operation.

10. The Symposium and Round Table request Unesco and Member States to increase the resources made available for these purposes.

OPENING SPEECH

International Symposium and Round Table

"Qualities Required of Education Today to Meet Foreseeable Demands in the Twenty-First Century"

Li Tieying
State Councillor

27 November 1989

Mr. Colin N. Power, Assistant Director-General for Education, Fellow Delegates and Observers, Ladies and Gentlemen,

The long-awaited international symposium on education in the twenty-first century opens today. Allow me, on behalf of the Chinese government and in my own name, to express my warmest greetings to delegates of Member States, observers of United Nations organizations, and all friends, and express the wish that the symposium and round table be crowned with success.

Ladies and gentlemen, the fact that our symposium on qualities required of education today for the twenty-first century is being held at a time when the human race is entering the last decade of the 20th century is proof of Unesco's foresight and sagacity. The symposium will take the form of a round table and seminars at which statesmen, economists, eminent personnel in scientific, technological and socio-cultural circles will gather together for discussions. This will ensure that the debate on education in the twenty-first century will be of the highest level. I am confident that the present symposium will exert a positive influence on the educational development of Member States and Unesco's activities in the field of education.

Education is an enterprise for the future. Today's university students, secondary school students and primary pupils will constitute the driving force in all fields in the twenty-first century. Their qualities, fostered through various forms of education, are likely to influence the first decades of the twenty-first century. People in educational circles must, therefore, show more concern about the twenty-first century and shoulder more responsibilities. The symposium will discuss "qualities required of education today to meet foreseeable demands in the twenty-first century", which is already a realistic theme of great importance.

We are now entering into the twenty-first century. The challenge education faces is tough and global. Therefore, the mission of education will be both arduous and glorious. Whoever grasps twenty-first century education will hold the initiative in that epoch. The concept of education will be further renewed. Education will be lifelong; it will be something to which society as a whole pays attention; the structure of education will become varied and more flexible, education forming a crisscross network embracing society in its totality; education will become the strategic focal point in promoting the economic and social development of various countries so that they will be able to take their place among the nations of the world. Exchange, cooperation and emulation in education amongst countries increases daily and, at the same time, is becoming an indispensable part of educational development and reform in all countries.

Ladies and gentlemen,

You may have followed with interest the course of education in China, a country with one fifth of the world's population, and the way in which our country has met the challenge of the twenty-first century. Over the past forty years, education in our country, just as our people's republic, has experienced the tortuous road of struggle and exploration. In the process we have also made continuous progress. We have established New China's socialist educational system which embodies the principle of educational equality; we expounded a series of policies whereby "Education must be geared to modernization, to the world and to the future", "Education must serve socialist construction and socialist construction must rely on education", "Education must be combined with productive labour". The structure of China's education is constantly readjusted according to the demands of economy and social development and will therefore become increasingly rational. Thanks to the great efforts of the past forty years, the percentage of illiterates in the population has decreased from over 80% to 20.6%. We have set up the largest educational system in the world. There are 10 million university, secondary and primary school teachers and the number of people receiving formal schooling has reached 200 million. In the past forty years we have trained for industry, enterprises, offices and the rural areas 22 million specialized personnel, and billions of workers now have an educational background. China's achievements in socialist construction would have been impossible without the progress of New China's educational undertakings, its trained specialised personnel and workers. These achievements form a base upon which our confidence in the future and our work towards the twenty-first century can be built. Needless to say, there have been errors, and we are confronted with problems and difficulties. But more important, in the past few years these problems and difficulties have been placed on the agenda of the Party and the Government. Solutions have been found for some, whilst others are still in the process of being solved. As of last spring, a special committee organized by the State Council, consisting of the departments and commissions concerned has been drafting a programme for educational development in China up to the year 2000. The National Centre for Educational Development Research undertakes research into medium- and long-term development strategies as the focal point for its work.

China has formulated a three-phase strategic plan of economic construction for socialist modernization. The first step is to double the GNP of 1980 and solve the problem of food and clothing for our people. The second step is to double it once more by the end of this century, thus enabling our people to lead a comfortable life. The third step is to reach the per-capita GNP of moderately developed countries by the middle of the next century. This will signify that our modernization has been basically accomplished and our people have begun to enjoy a relatively affluent life. Then, China will continue to advance on this basis. Throughout this process, the development of education will be given strategic priority. Economic growth will be gradually switched to dependence on scientific and technological progress and continuous rise of productivity. Educational development strategies will constitute an important part of China's general development strategy and the realization of the overall strategic plan.

I believe that the research on development strategies for China's education, the reform of educational structures and innovative content and methods in education will draw both inspiration and learn lessons from this symposium. In concluding my speech, I would like once more to express my warm welcome and my thanks to the delegates, Mr. Power, Assistant Director-General and his colleagues.

Annex 2

ADDRESS

International Symposium and Round Table

"Qualities Required of Education Today to Meet Foreseeable Demands in the Twenty-First Century"

Dr. Colin N. Power
Assistant Director-General for Education
Unesco

27 November 1989

Ladies and Gentlemen,

It's a great honour and pleasure that the Unesco International Symposium and Round Table "Qualities Required of Education Today to Meet Foreseeable Demands in the Twenty-First Century", being graciously hosted by the People's Republic of China, opens today in Xiangshan Hotel in the Xiangshan park, Beijing. On behalf of the Director-General of Unesco and on my behalf, I am happy to welcome all of you to this meeting.

I should like to express our gratitude to you, specialists from different backgrounds, for taking on the debate on the future goals of education and the qualitative requirements of education if it is to help young people to meet their personal, social needs as well as societal needs of the Twenty-First Century. By inviting you to actively participate in the debate on the future conception of education, Unesco wishes to learn and obtain from you suggestions on forward-looking goals, insights and directions of education, in order to shed fresh light on Unesco's Major Programme Area I - Education and the Future, which was approved a few weeks ago by the Twenty-fifth session of the General Conference.

Debates have recently been reopened and intensified on how education should be re-oriented and on its more dynamic conceptions and roles, with a view to improving the quality and relevance of education, in order to prepare young people towards the Twenty-First Century. Young people are energetic, idealistic and full of potential skills and talents and attitudes which will serve their means to face future challenges. Their strive for excellence and competence will create a force to change and shape the Twenty-First Century. Let us maintain a dialogue with them, try to understand each other and respect them, so that they will do the same with us and understand the wisdom and experiences of adult and older generations.

The participants in the Round Table, who are multidisciplinary specialists in such disciplines as science, economics, sociology, philosophy, psychology, etc., are invited today to debate long-term goals of general education and to tell us what education must do in order to prepare young people for their active and constructive participation in their personal, social and occupational life in the next century. We would appreciate

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your drawing attention to the wide socio-economic, socio-cultural realities and the challenges which must be faced by education from now towards the Twenty-First Century. How can education be re-oriented and vitalized to attract and convince young people of the worthiness of its goals, processes and outcomes? What are the necessary skills, knowledge, attitudes and values which education can persuade young people to learn and maintain? How should young people be guided in order to cope with the continuing information explosion, and with the serious deterioration of our physical environments? How could they be assisted in learning the meaning of international cooperation, effective intercultural communication and human relationships? In addition to the acquisition of knowledge and thinking processes, how could education promote humanistic and effective learning to develop a balanced personality, sensitivity, love and compassion towards other people and to deepen their understanding and appreciation of different cultures, beliefs and values, whilst sharpening their own cultural identify? I am sure that there are many other important questions, which are of equal importance, to be explored with regard to the goals of education.

The Symposium will have its own participants who are mostly educators, as well as those of the Round Table, thus permitting interactive discussions between education specialists and specialists of other multi-disciplinary fields. The Symposium will focus its discussion mainly on the qualities of education, by taking into account socio-economic and socio-cultural forces such as value orientation and its implications for education, scientific and technological progress, communication and information and the future world of work. May I remind you that our main focus in the Symposium is general education and its teaching-learning environments, dealing with such things as qualitative educational goals, educational contents and methods, learning assessment and teacher education. As you have already noted in the Discussion Guide, we shall not discuss planning and financial aspects of education nor higher education or literacy, which will be fully examined by other Unesco meetings and programmes.

It will not, of course, be possible, in the next few days, to cover all the dimensions of the qualities of education, nor will it be possible to examine specific modalities or courses of action associated with the qualities of education required towards the Twenty-First Century. May I therefore ask you to kindly concentrate your debate on the main qualitative goals of education, and their requirements in order for young people to effectively and meaningfully cope with their future today and towards the new century?

The results of the present meeting, particularly your comments and suggestions on the qualitative improvements of the educational process will be fully taken into consideration in implementing the activities of Unesco's Medium Term Plan (1990-1995), Major Programme Area I - Education and the Future, particularly its programme "Education for the Twenty-First Century"; The overall objective of the programme is to launch action for improving the quality and relevant of education, which is exactly the main theme of our meeting.

The kind of values and attitudes, either universal or culture-specific, which you think desirable for young people to understand and learn and their educational implications will fit into Unesco's programmes designed to enhance the humanistic, cultural and international dimensions of education within the framework of the afore-mentioned programme.

The suggestions on the socio-economic and socio-cultural implications of education will be useful in implementing Unesco's programme dealing with education for the quality of life, including the prevention of AIDS and drug abuse.

The world of work and education is another area to which your deliberations could contribute. What should be the role of education, both formal, non-formal and informal, in preparing young people for their active and instructive occupational role? How could education, particularly school education effectively interact with the world of work, i.e. enterprises, business, social institutions etc. in order for both parties to learn and benefit from each other as much as possible?

How should continued education and training for young people be maintained in order to enable them constantly to update and renew their skills and knowledge so that they can cope with a rapidly changing occupational world or structural changes in the economy?

The value of science and technology education. Nobody can deny the impact of science and technology on our daily lives. Being keenly aware of the importance of the notion and its implications, Unesco has been attempting to bring science and technology close to daily life situations. These efforts will continue and will be strengthened in Unesco's future programmes in this domain. There are also pedagogical implications of science and technology education. There seems to be some important attitudes and orientations in science and technology from which the learner can benefit. The values of a scientific approach, learning by discovery, systematic inquiry, intellectual curiosity for the unknown - all these cognitive dimensions of learning could be more effectively combined with the affective domain of education, dealing with values, attitudes, feelings, etc. The learner may also benefit from science and technology for knowing himself/herself more scientifically, about his/her body and psychology. Medical and health education can be reinforced in order to promote self-managed physical fitness, the maintenance of good health. Research findings derived from neuro and cognitive sciences could be translated into the curriculum context (e.g. biology) and into the social science subjects of the teacher training programme.

Finally, dealing with information and communication, the most effective introduction of technology in this field could be explored with clearly defined purposes for its use and applications. Learners should be educated not only for the effective use or manipulation of communication and information equipments, but also to be able to locate and select the necessary information and to critically assess its uses and applications.

Lastly, let me refer to some important meetings for which the results of this meeting could be taken into consideration. The World Conference on Education for All - Meeting on Basic Learning Needs, to be held in Bangkok in March 1990, dealing with the quality of primary schooling for all children and literacy linked with life skills for adults to enable them to cope with the demands of the modern world. Unesco will also organize an International Congress on Educational Planning and Administration in 1990, dealing with educational planning, policies and management.. Two regional conferences of Ministers of Education and those Responsible for Economic Planning in Africa (MINEDAF) and in the Arab States (MINEDARAB), and the fourth session of the Intergovernmental Regional Committee for the Major Project in the Field of Education in Latin America and the Caribbean (PROMEDLAC) will also be held during 1990-1991.

I hope that Unesco will learn much from your debate and exchange of opinions on the main qualitative aspects of education which faces the New Century in ten years or so. The results of this meeting will be widely disseminated by Unesco.

I thank you once again, on behalf of the Director General, for all who have provided generous help in order to make this meeting possible.

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